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BETWEEN **OFFICE DESIGN**
AND WORKER
productivity



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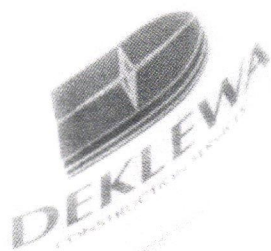
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When Productivity Jumps

By Tracy Certo, Editor



Getting Pittsburghers better connected with nature and our abundant outdoor activities makes for a more thriving city.

The irony stings. As I approach deadline

for this issue on office design and worker productivity, I am having a most unproductive week. Usually this close to deadline, my productivity jumps. I choose that verb carefully. You will soon see why.

My health, essential for productivity, is good. I have no complaints about my office. I'm motivated (a key factor) since deadline is approaching.

So what's the problem? I'm wildly distracted since I agreed to go skydiving for the first time this coming Sunday. So here I am, dealing with waves of anxiety interspersed with periods of acute excitement interrupted by strange lulls of calm. In other words, I'm having a hard time concentrating.

Static line jump at 4500 feet and land myself, or tandem jump at 13,000 and let the instructor do the work?

Productivity is a very difficult thing to measure even on a good week. For writers and architects, it's work produced as well as time spent on a project. When you're self-employed, you don't get paid for down time (down time!). And if you spend too much time on projects your hourly rate plummets. (plummets!) So if you obsess over something, such as whether you really *will* jump out of that plane once you're looking down from 13,000 feet, your productivity dives (DIVES!).

This week I checked my emails far too often, expecting several that were article-related and quite a few that were jump-related. We all know email is an efficient, time-saving tool as well as a real time-waster. I love email. I love writing articles on topics as interesting as office design and being focused and productive. Conversely, I hate being...jumpy.

I wouldn't be in this position if it weren't for the Western Pennsylvania Field Institute, a great organization with the mission to get Pittsburghers outside enjoying activities such as kayaking, canoeing, and hiking. (www.wpfi.org) The idea is, getting Pittsburghers better connected with nature and our abundant outdoor activities makes for a more thriving city. I agree. Which is why I volunteer as a trip leader, which is why founder Mike Schiller sent me a list of autumn activities to choose from, which is why I'm jumping from a plane on Sunday. It was time.

Here's the thing: With a static line jump, you must train for five hours, mostly dealing with what could go wrong. Ugh. On a tandem jump, it's half an hour and you're off—at a much higher altitude with fifty seconds of freefall. Or as a friend of mine said, "Fifty seconds of wondering, will the chute open or not?"

Kevin Kampschorer of the GSA would say my distracting thoughts are creating a spillover effect. He told me the National Institute of Health found that our perception of the physical office environment is interrelated in a complex way to our mood. If you're unhappy because you're too hot or uncomfortable, the acoustics and light don't appear as good.

I thought about this but that only made me think more about skydiving and how uncomfortable I'm going to be in that plane and how much I look forward to next week when I will cease (bad word) thinking about it. To think, I could have led the kayaking trip which I enjoy very much. Paddle paddle, la dee dah.

In the latest email, Sean Brady, program director of WPFI wrote to all of us "loonies" that "... Cotton kills. Wear polypropylene..." Huh? We're jumping out of a plane and *cotton* kills? I did buy a new jacket, of wicking fabric as suggested. Brought it home and tried it on again and honest to God, the zipper didn't work. Here's the thought process: Zipper. Rip cord. Zipper...

Fortunately, my work is keeping me somewhat sane. Luck's been with me in contacting some national experts, all very helpful. Judith Heerwagen referred me to her British publisher, Richard, who emailed me back right away about my request to publish excerpts of her writing. I wrote back to thank him and considered asking, out of the blue so to speak: So, Richard, ever jump out of a plane?

As deadline closes in, my productivity has to jump. And it will. And so will I. As Roger Kingsland said to me, "There's no motivator like fear." And he didn't even know what was on my mind this week.

###

P.S. The editor jumped tandem with a freefall that was out of this world thrilling. She now has a strong (distracting, you might say) desire to do it all over again.

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On the cover: Interior view of PNC Firstside, designed by Astorino. Photo by Ed Massery.

AIA Pittsburgh serves 12 Western Pennsylvania counties as the local component of the American Institute of Architects and AIA Pennsylvania. The objective of AIA Pittsburgh is to improve, for society, the quality of the built environment by further raising the standards of architectural education, training and practice; fostering design excellence; and promoting the value of architectural services to the public. AIA membership is open to all registered architects, architectural interns, and a limited number of professionals in supporting fields.

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The Lights are on and Everyone's Home

AIA Pittsburgh's Annual Membership Meeting By Maya Haptas

Close to 50 AIA members and Professional Affiliates, along with Riverlife Task Force members and others from the design community, gathered at the Regional Enterprise Tower on September 18th for AIA Pittsburgh's Annual Membership Meeting. In addition to voting in the new members of AIA Pittsburgh's Board of Directors, AIA Pittsburgh and the Riverlife Task Force held a panel discussion on signage.

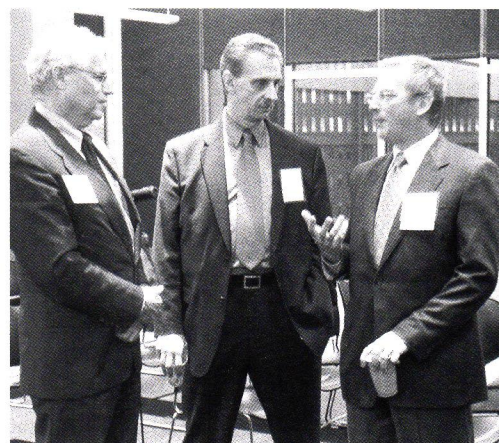
The panel included Patrick Hassett of the Department of City Planning, Bill Kolano of Kolano Design, Murray Horne of the Wood Street Galleries and Joel Aronson, Esq. of Reed Smith Construction Group.

Moderator Rich DeYoung, AIA of WTW Architects and current President of AIA Pittsburgh's Board of Directors, began the discussion by outlining the specific intent of the panel, noting that "signage shapes the way a city looks in a rather profound way." He continued by asking if it is possible to speak about a vision for the way a city looks and craft a sign code to meet that vision. The purpose of the panel was to begin a conversation on the possibilities of signage and how signs can impact the vision we wish to project about Pittsburgh.

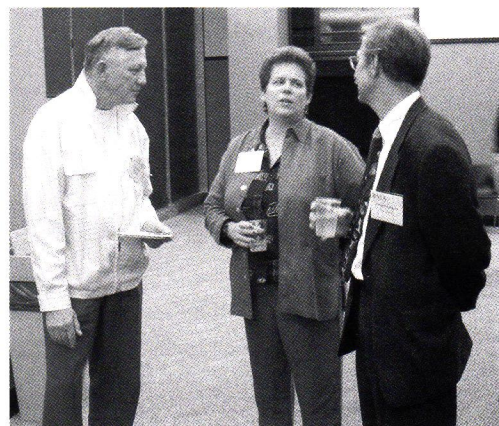
Each panelist addressed a question specific to his expertise. Patrick Hassett discussed the origins and logic of the sign code as it now stands. Bill Kolano spoke about the potential of signs and how new technology is driving the way we receive visual information. Joel Aronson addressed the issue of freedom of speech with regard to the sign code and how the sign code can or can not control how information is disseminated. Finally, Murray Horne tackled the question of whether commercial signs can be public art.

Patricia Lowry wrote a column in the Pittsburgh Post Gazette on this event which can be viewed by visiting the Pittsburgh Post-Gazette website at www.post-gazette.com

This event was generously sponsored by Bunting Graphics.



Stephen Quick, AIA, Perkins Eastman, Kent Edwards, AIA, The Design Alliance Architects, and Bill Kolano, Kolano Design



Jack Grzybeck, AIA, Burt Hill Kosar Rittelmann, Anne J. Swager, Hon. AIA, Executive Director of AIA Pittsburgh and Rich DeYoung, AIA, WTW Architects



Panel (l to r) Murray Horne, Wood Street Galleries, Bill Kolano, Kolano Design, Joel Aronson, Esq., Reed Smith Construction Group, and Patrick Hassett, City of Pittsburgh, Department of City Planning



Columns is printed on recycled paper.

HAC Presents...

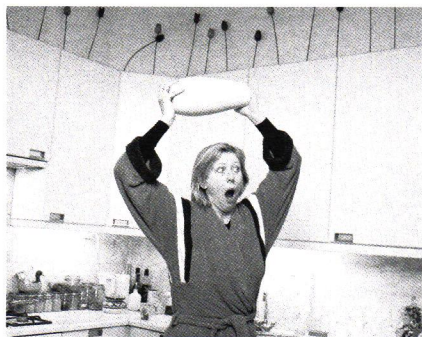
The creative work of contemporary young designers and architects is evolving a new landscape of products and spaces that is now explored in *Strangely Familiar: Design and Everyday Life*. The exhibition—on view at Carnegie Museum of Art's Heinz Architectural Center and in the Museum's Heinz Galleries—will open on November 7 and run through January 11, 2004.

Strangely Familiar: Design and Everyday Life presents a wide variety of projects from across the world and from many design categories. From the dynamism of mobile architecture to the responsiveness of inanimate objects, these creations challenge our assumptions about the design of spaces and objects. Their incompleteness and openness is in opposition to most design ideals that typically demand a high degree of finish, that equate functionality with practicality, and that perceive adaptation as a flaw, participation as compromise, and unpredictability as a risk. More than 40 innovative projects from designers and architects such as Marcel Wanders (The Netherlands), Shigeru Ban (Japan), MVRDV (The Netherlands), and Garofalo Architects (United States) will be featured.

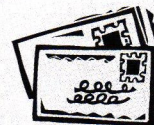


PHOTO BY TRACY CERTO

HAC curator Raymond Ryan and former editor of the *Architectural Record* (and former *Pittsburgher*) Margie Schmertz discussed the various projects featured in the successful *Pittsburgh Platforms* exhibition. The talk, which was well-attended, was held Saturday, September 20th at the Carnegie Museum.



"Do Break" at HAC



LETTERS TO THE EDITOR

■ I was impressed by the articles on the role of the environment in healing. We are developing several approaches using environment to effect the course of hospitalization. Jeff Walch, a former CMU student is working full-time with us on this project. Two years ago we spent a lot of time with people from Astorino and Burt Hill reviewing the central nervous system mechanism of the outcomes produced by the calming built environment. We are in the process of preparing our outcome data for publication. We can share after it is accepted.

*Bruce S. Rabin, M.D., Ph.D.
Professor of Pathology and Psychiatry
Medical Director, UPMC Healthy Lifestyle
Program*

■ Regarding the article about the Academy of Neuroscience for Architecture. As my wife said, this is one of the best articles that have been written about your work. The writer seems to understand what you are trying to do. Thanks for the good job.

*John P. Eberhard, FAIA
Latrobe Fellow
The AIA College of Fellows*



"Seen" at The Design Awards Gala

◀ **Did you make the scene at the Design Awards? Look for the December issue of *COLUMNS* with the complete rundown of Design Award winners and other Design Award activities. Seen here at the Design Awards gala: Marylynn Uricchio, Seen Editor at the Post-Gazette, Michele Q. Margittai, and Carol Brown, AIA Pittsburgh Gold Medal Honoree.**

MAKING THE
CONNECTION
BETWEEN **OFFICE DESIGN**
AND WORKER
productivity

Can office design
enhance worker well being
and the bottom line?
Columns goes in search of
the evidence.

BY TRACY CERTO



PHOTO BY ED MASSERY

Main entrance to PNC Firstside is positioned at the end of Ross Street to accommodate easy access for employees from numerous bus routes as well as the LRT. Most employees at Firstside use public transportation to commute to the facility.

LEFT: PNC Firstside monumental stair at perimeter of atrium allows easy movement of more than 1200 employees at the facility. The large floors are broken into three main office areas that all meet at the atrium. Oversized handrails are provided to reduce vertigo while standing at the atrium edge.

PHOTO BY ED MASSERY

What happens when you transfer employees from a drab office setting—harsh fluorescent lighting, dull walls, no views, you get the picture—to a modern and attractive office with ample natural light, great urban and river views and stylish furniture?

As you might expect, many good things. At PNC Firstside, PNC Financials' award-winning green building designed by Astorino, employees went from an uninviting office atmosphere (to put it kindly, as one employee said) to one that is pleasing in every way.

Clearly, the design for the operations center was a winner in terms of aesthetics, green design and enhancing the urban skyline. But what about office productivity, an obvious priority for a bottom-line business such as banking?

"By every measure—productivity, absenteeism, turnover—we are better than we were before by 20 to 35%," says PNC's Gary Saulsen, VP of real estate.

Saulsen hired graduate student researchers to conduct his own study of improved office environment and its effect on employees. Unfortunately, he was never issued a final report by the business school students (who have since graduated, leaving reams of valuable research information yet to be summarized.)

That's the problem in a nutshell: a lack of sufficient research in field studies that would be of great value to architects and designers in linking office design to performance and productivity.

How important is it to make the connection? "It's key, one of the most important things we can do," says Gary Moshier, AIA. Although "it's a very hot issue," he says. "It's just a tough one to get anything measurable and then, to fund the research."

Measuring productivity is difficult for a number of reasons. Not only are there many variables but the performance metrics vary by industry.

Knowing the value of evidence-based research, office productivity is one of the projects supported by the Academy of Neuroscientists for Architecture, a San Diego-based group comprised of architects and neuroscientists for the purpose of studying the connection between the brain and how it perceives architecture. Specifically in this case, "by understanding the biological basis for workplace stress", they'll better understand the potential for induced illness.

For now, companies such as PNC will have to settle for anecdotal evidence in relaying their design success story. Despite the lack of hard research, what is known is that



Multiple seating options are provided at PNC Firstside cafeteria located on the top floor to take advantage of river and hillside views. Banquet seating and conventional table arrangements are combined with stools at window side counter. In addition, an outdoor dining terrace is to the left. These spaces are used frequently for breaks and small informal meetings, as well as larger corporate functions.

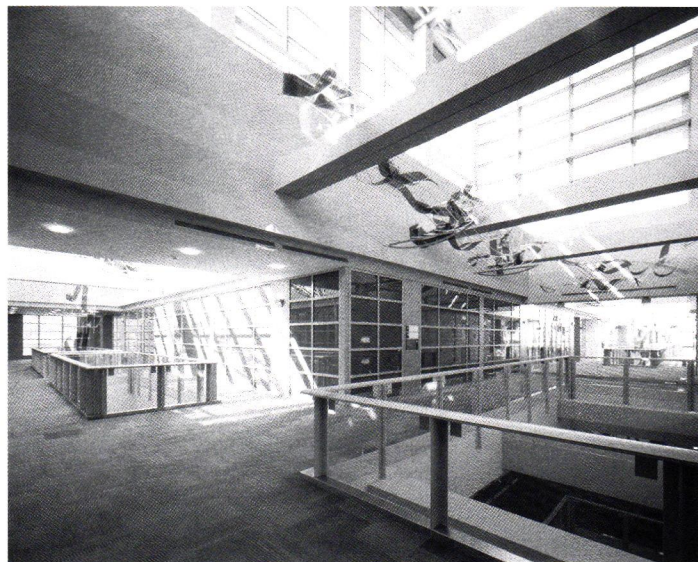
employees really like the workspace. That boosts morale which positively affects productivity.

And why not? PNC Firstside was designed "as a facility where employees wanted to go to work," says Saulsen. He once guided a group through the facility and was asked if this was where executive management worked. When he informed the woman that it was an operations facility, she expressed surprise. "But isn't this too nice for them?" she said.

Think what you will about that remark but the point remains that PNC exceeded expectations in many ways in building the LEED-accredited operations center. And it looks like they're onto something.

Elements in green design—such as daylighting, non-toxic materials, high quality lighting to reduce glare, increased air flow, personal temperature controls—happen to be the areas of focus of studies examining productivity measures.

Green design, in other words, is part and parcel of an integrated good design that goes beyond obvious benefits for the environment to include better health and well being of workers. And that translates to improved productivity. According to Steven Orfield of the Open Plan Working



PHOTOS BY ED MASSERY

Providing maximum exposure to daylight was an important objective in the design of PNC Firstside, says Elmer Burger II, AIA of Astorino. The intersection of two main circulation elements (the slice) also provides wayfinding orientation to the 125,000 sf floor plate. Burger points out that PNC Firstside has a very efficient net to gross ratio yet is able to provide wide circulation elements.

Group in Minneapolis, up to 96% of company costs relate to people while four percent is spent on building efficiency and operating costs. "A lot is known about building efficiency but little is known about worker productivity," says Orfield whose group's goal is to improve the quality of design through scientific occupancy and building performance research. "You can gain huge benefits if you eke out a 10 percent increase in worker productivity," he suggests, adding that the number of studies on the subject isn't large but it is indicative.

His thinking, reflective of a trend in the industry, is to view facilities as a profit center rather than an expense. In order to do that, it's necessary to quantify the value and benefits of high-quality design practice.

"When it comes to facility decisions, costs are almost always the predominant consideration," writes Judith Heerwagen, PhD, an environmental researcher in Seattle. The reason? It's easier to document cost reductions, which are immediately apparent, and more difficult to document benefits and value.

To quantify the value and benefits of high-quality design practice, Orfield conducts studies of employees, ranking numerous factors in the work environment, from acous-

It's easier to document cost reductions, which are immediately apparent, and more difficult to document benefits and value.

tics and lighting to quality of work tasks and compensation. "We're beginning to see that as people rank aspects of facility lower there's a collateral reduction in the ranking of the company," he says.

Once you discover what's wrong, you can then fix it. "Our strongest interest is in understanding what *kind* of design strategy causes positive and profitable responses in employees."

If he doesn't know yet what that is, he does know that increasing the amount of space for workers, like call center workers, makes them happier. And that "daylight has a payback other than energy saving. And that "controlling aspects of their environments leads to happier workers."

KSBA and Performance Design

In Pittsburgh, there's at least one architectural firm that in the last several years has been making the case between office design and performance. "Our practice approach is "performance design", which links design to the bottom line of the corporation," says Roger Kingsland, AIA, principal of Kingsland Scott Bauer Associates, a firm that specializes in high technology office space. KSBA relies on a database of hard research on productivity and performance design, some of which they've done themselves.

Although productivity is hard to measure in some industries, it lends itself to call centers, a specialty of the firm. "Call centers measure productivity to a high degree with performance metrics such as call waiting times, call duration and customer service levels," explains the architect.

That made it easy to measure the results for one call center facility with a goal of reducing a high turnover rate that was costing the company millions. After KSBA designed a new facility, there was a measurable 40% reduction in turnover, says Kingsland.

"There is a link between productivity and saving energy," he says. Often we can justify a capital cost in terms of energy savings and then say, 'oh by the way, this research shows you could improve productivity to the extent that the energy savings will pale by comparison'."

KSBA convinced a call center client to switch to flat screen computer monitors, resulting in a return on investment rate of 250-300%. There were some energy savings, sure,

TWIN SILO ACCOUNTING

Until real estate accounting practices recognize the profit opportunities available to them, it will be impossible to make substantial improvements to building and occupant performance, argues Kingsland Bauer Scott Architects. To help prove their case, KSBA developed Twin Silo Accounting which distinguishes between the Benchmark Silo and the Design Performance Silo.

Twin Silo Accounting

■ The traditional real estate value proposition is seen primarily as cutting capital cost and reducing project delivery time;

■ Because real estate is seen as a cost center with no profit potential, corporate management with strategic responsibility (C_O types) does not perceive real estate as having any potential to improve the bottom line and, therefore, looks to other corporate departments (HR, IT) for opportunities to "spend money to make money";

■ One major problem is proving to the CFO types that real estate has the potential to improve the bottom line;

■ In the last 10 to 15 years, two things have occurred that allow the value of real estate to be proven in business case terms; first, completion of hard research linking specific solutions to improved building and/or occupant performance; second, development of new building technologies that accomplish these improvements economically;

■ However, because most real estate accounting practices focus primarily on cost cutting, the result is those innovations that could improve the bottom line are the first to be eliminated because they increase the cost above that of the last, similar project;

■ Therefore, real estate is not allowed to play on a level playing field; the largely untapped poten-

tial of performance-based design is ignored while strategic management adopts new, expensive programs from other departments as opportunities to improve performance. Many of these programs are justified by research less substantiated than the research that justifies spending more on real estate;

■ Until real estate accounting practices recognize profit opportunities, it will be impossible to make substantial improvements to building and occupant performance;

■ The solution, Twin Silo Accounting: establish two silos, one as "The Benchmark Silo" that tracks the conventional costs of the current benchmark (cost center) solution and the second as "The Performance Design Silo" that includes any changes or additions to the benchmark solution scope made to improve building and/or occupant performance;

■ The Benchmark Silo would include the scope and cost of what has typically been done to date (it might also be called current best practice), the cost of which is expected and accepted within the enterprise;

■ The Performance Design Silo would include specific improvements such as integrated access floor, in-floor HVAC, modular cabling, automatic light dimming, sound masking, flat panel monitors, etc.; the economic impact of every Performance Design alternative would be measured; the measurement method and success parameters would be established beforehand;

■ Measurements could be made of specific improvements (example, energy savings associated with automated dimming) or on a global basis where performance is measured against an established benchmark facility, preferably one where the staff moves to a new facility. — KSBA

“Real estate is not perceived by top management as a place to go to squeeze out performance. This presents great opportunity for those of us who can link design and profit through research and financial analysis.”

— Roger Kingsland, AIA

he says, but primarily the savings were from reduced space. So while the IT department coughed up extra for the screens, the real estate department benefited with space reduction savings of 12%. This underscores the need for a holistic approach to performance design within the corporation. Often two departments don't converse yet they need to for the approach to work, he insists.

To assess needs and uncover design preferences of clients, Kingsland, in association with Orfield Labs, has used Perceptual Marketing Research. The metaphor-based method measures perception of customers by asking them indirect questions. For example KSBA will show slides of different environment solutions such as lighting and workstation design giving the user 40 seconds to fill out their impressions of each image to answer questions like: is it warm or cold?

Why is this approach better than asking direct questions in a focus group? “People are funny,” Kingsland answers. “If it's done in a group, the group dynamics tend to influence the decisions. Sometimes the boss tends to ride herd over people and influence their decisions.” Other times, it's a case where they don't know what they really like and so are unable to or inaccurately state their preferences.

The difference between KSBA's performance design approach and that of Orfield Labs, is that Orfield equates worker well being with productivity: If you improve worker well being, you'll improve productivity. Kingsland says they try to link design and actual building and/or occupant performance. “We don't care about worker well being, we care about performance,” he cracks with a laugh. “But lo and behold, achieve one and the other will follow. The hurdle is proving it to the CFO type who controls the purse strings; that is where the ability to make the connection is important.”

For KSBA, hard research is necessary and they have at least 60 studies to draw from in their database, from studies done by the Lawrence Berkley National Laboratory to projects featured by the Rocky Mountain Institute. “We're careful to avoid soft research because you lose your credibility when the CEO grills you,” says Kingsland who adds that his firm, housed in one of the first green buildings in the country, is green by default. “We're money green, not tree-hugging green.” It's the energy-saving, money-sav-

ing aspects that light their fire. “The green movement,” he says, “is finally getting smart and connecting things to money.”

Kingsland has always respected the bottom line. “We have always been capitalist pigs so we started out with an emphasis on profit. What's interesting is that both approaches result in similar solutions,” he says.

“The value of real estate can be greatly expanded beyond just doing buildings cheaper and faster. Most people perceive the value of design to be primarily aesthetic,” notes Kingsland who faults companies for building 15 to 100 year projects with a twenty year model. “Real estate is not perceived by top management as a place to go to squeeze out performance. This presents great opportunity for those of us who can link design and profit through research and financial analysis.”

To make his case, Kingsland presents clients with the Twin Accounting Silos, a method that distinguishes between the benchmark silo and the performance design silo (see sidebar page 9).

Changing Core Values

As director of research for the General Services Administration's Public Building Services, Kevin Kampschroer is establishing a research project to measure the relationship of office space and productivity. As the largest landlord in the country, it made sense for GSA to reexamine their goals in dealing with 300 million square feet of office space and the connection to productivity and human behavior. “We're trying to link three different areas together,” says Kampschroer, “physical, with individual and group behavior together with organization performance. No one's really done this before.” Nor on a scale this large.

The goal, in part, is to maximize the performance and value of buildings, implement sustainable buildings practice and better understand the knowledge of work and workplace to affect change. Of the 22 different research projects one, involving Carnegie Mellon University, is Workplace 20•20 where they will study the interaction of the 3 B's—buildings, behavior and business.

Kampschroer cautions that even given the scope of this research, “there are not going to be any universal solu-

tions." He pauses for just a second. "If there is one, it's that we need to build more flexibility into the infrastructure of the offices. Work patterns are changing faster than the environment and people need more meeting spaces than are being provided."

And yet perception is reality. "One of the interesting things you've got going on here," says the researcher, "is, here's this piece of space and here's the behavior. The National Institute of Health found that aspects of the physical environment people perceive, whether it's acoustics or lighting, are interrelated in a complex way. If you're unhappy because you're hot and sticky, the light doesn't appear as good and acoustics aren't as good. It has a spillover effect."

In studying one office environment, Kampschroer says there were complaints about the lack of meeting rooms and yet, they found plenty that weren't being used often. The problem was "ownership" of such rooms, and the fact that most were designed for 20 people when the majority of meetings in this particular organization were for small groups averaging three.

"Some spaces designed for collaboration don't work while others do," Kampschroer says while questioning what factors are behind that. From the start, you have to figure out what people do and what kind of space they need, if any.

The same thinking is behind the "mobility strategy" which takes into allowance a large number of employees who travel often, leaving offices vacant most of the week, says Marty Powell, AIA, of The Design Alliance. TDA has recently completed three new regional offices for IBM Corporation where highly mobile staffers make up roughly 80% of the population. "Many people may report but most travel a lot so they share space, say four or five to a desk," he says. "Why spend money on real estate for someone who only spends one day a week in the office?"

Mobility is the pattern and not the exception, according to Dr. Franklin Becker of Cornell's Intelligent Workplace Studies Program. In a paper published on the Web site, Becker refers not only to the mobility of office workers—being on the go, that is—but also to the idea that workers move around to different places within the office to do their work. That greatly affects design.

GSA PITTSBURGH FIELD OFFICE

THOMAS MOORHEAD BUILDING • KSBA ARCHITECTS

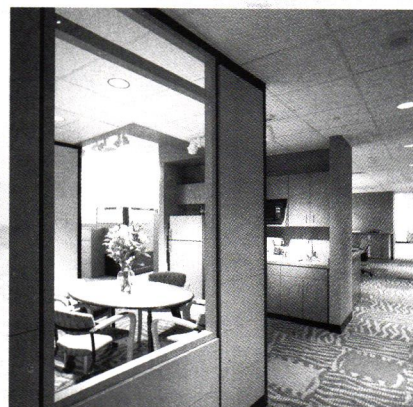
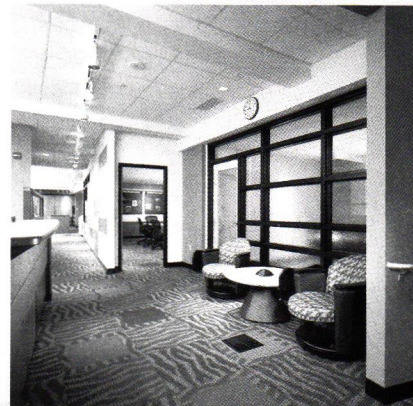
The renovation of the GSA Pittsburgh Field Office represents the second-generation prototype of the Integrated Workplace Concept and its first application to a GSA Field Office. As a prototype and laboratory, the project included benchmarking and analysis of the existing space, and the user's reaction to the space.

The design process was highly interactive with the occupants and included the first-ever use of Perceptual Market Research (PMR) techniques to provide user input into the perceptual aspects of architectural design. Though a 3-D CADD modeling, aspects of the design were presented to the users for their input and discussion. The users were also involved with the design and selection of the workstation furniture, including a month-long trial period in mockups provided by various manufacturers. The workstations were designed to respond to the users' needs for storage, workspace, privacy and interaction.

The need for flexibility and individual comfort control was addressed with an Integrated Access Floor, allowing power and air outlets to be positioned within one foot of any point on the floor.

Removal of the supply ducts from the ceiling allowed the ceiling to be raised to accommodate direct/indirect lighting over the work areas; circulation and perimeter area are lit with incandescent down light, track, and wall-wash fixtures. The variety of lighting colors and levels throughout the space is controlled by a dimming system that changes the light levels in response to changes in daylight and according to intervals throughout the day, programmed to provide additional stimulus to the occupants.

Visual stimulus is further enhanced by the use of a variety of colors and textures on the floor, walls and furniture, with calm colors used in the work areas and more vibrant colors and patterns used in circulation and transitional areas. The workstations are enclosed with fabric, perforated metal and glazed panels, while most of the wall surfaces are painted.



Flexibility and individual comfort control are key in this prototype of the Integrated Workplace Concept at the GSA Pittsburgh Field Office in the Moorhead Building at 1000 Liberty Avenue. Architect: KSBA.

Linking Comfort and Productivity

"I'm an architect so I do believe a better work environment will increase your productivity," says Azizan Aziz at the Intelligent Workplace at Carnegie Mellon University. "I just don't have the data set showing that." That will soon change with his recent involvement in Workplace 20•20 in conjunction with the General Services Administration, and the Neuroscience in Architecture group in San Diego.

"We are working with the GSA trying to do baseline measurements," explains the researcher. "We're looking at environmental measurements like temperature, humidity, acoustics measurements, visual quality, IQ cam and glare factor."

When they walk through a building, they note all the stressors, observing the number of personal heaters or fans or lots of sweaters which indicates a temperature control issue. "We are trying to prove the correlation between loss of control and worker productivity. If I could tell you productivity would increase by 10%, then 10% of 80% (the company's cost of workers) pays your rent."

What baffles Aziz is the idea that people have total control of the climate in their cars where they spend an hour or less a day yet at the office, where they spend eight hours a day or so, they can't see outside and there's one thermostat for 50 people. "Why can't we have the same technology in the workplace?" he asks.

Judith Heerwagen, PhD, an environmental researcher from Seattle reports that personal control of the environment has been linked to productivity for a number of reasons, one simply being the time spent trying to achieve comfort. David Wyon, for example, estimates that workers who have temperature control of just three degrees increase their productivity levels by as much as 8.6%, she writes. Small personal freedoms such as this have a psychological effect on workers.

Heerwagen cites more research: In a review of occupant surveys over a 20 year period in the UK, Leaman (1999) reports that comfort and perceived productivity are greater in buildings where occupants have more control over the

environment and in mixed mode buildings that have both natural ventilation and air conditioning. Two cross sectional studies of more than 11,000 workers in 107 buildings in Europe also found increases in perceived productivity, fewer illness symptoms, and less absenteeism in buildings which provide workers with control over temperature and ventilation conditions compared to a control group (Preller et al, 1990).

Existing studies, although few, show a "strong link" between environmental factors, SBS symptoms and work performance, writes Heerwagen.

In the user satisfaction survey Workplace 20•20 is using—in the next six months at five federal facilities—perception of comfort will be measured pre and post move. One facility, a torpedo factory in Kansas City that Aziz says is a mile long and a mile wide or so it seems, has no windows. The plans are to punch in skylights and atriums along with new furniture and space designations. Such a drastic change in design could pay off big in terms of worker satisfaction and productivity.

But how does one measure it? Productivity means different things to different companies and is affected by a number of factors, from how long it takes to get products to market to health issues such as carpal tunnel syndrome and absenteeism, says Aziz.

For now they're trying to determine key building attributes and which are really important. "We're fishing around. Some of the data we won't get," he says.

Although Aziz perceives a lack of field studies on the subject, he thinks certain studies indicate correlations between design and performance. He mentions a study in a California school, where daylighting was found to contribute to an increase of 5 to 10% in student test scores. When Wal-Mart added skylights, sales increased, he notes. "Can we make the leap of faith that worker productivity will increase with the introduction of daylight?" Although it is one of their hypotheses, and he personally believes it does, he says they're "struggling with business measures. We don't have data sets."

THEN AGAIN

who needs studies?

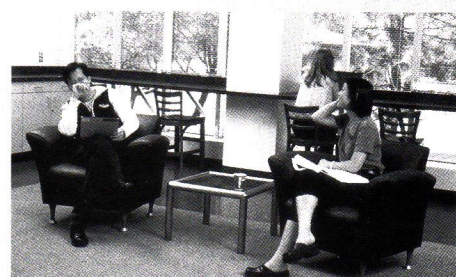
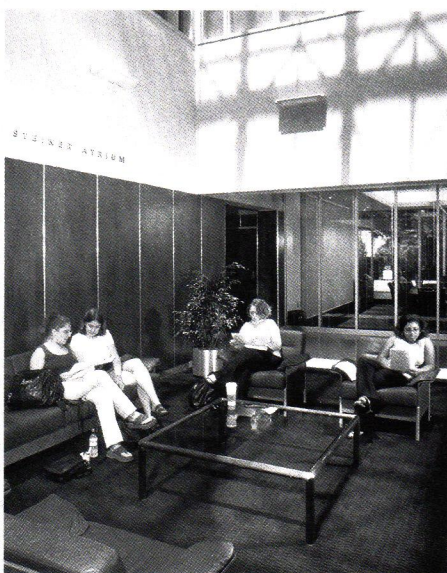
Sometimes it's easy to measure the success of office design without the use of any evidence-based studies or research. One example is the sleek and sexy Alcoa Corporate Center on the Northside which has proved a huge hit with employees. The building now holds 100 more people than expected. "It's more dense because people wanted to be in the building," says Marty Powell.

As a result, The Design Alliance architects recently enlarged and improved the food service, another hit with Alcoa workers, and reconfigured some of the collaborative spaces as meetings grew bigger. "What kind of home base allows an organization to hang together and work as a team?" asks Powell. The building is full of team work spaces combined with other work spaces designed for quiet work and placing conference calls.

Measuring the success of new office design depends on the organization and what's typical in the industry," Powell says. "We look for measurements that the client uses and see if we can link them to the architecture. My best example of this is with a client of ours, the Katz Graduate School of Business. One of their measures of success is to improve their ranking and, much to my delight, they are moving up on a number of lists."



One size workstation for all employees at Alcoa Corporate Center on the Northside.



Ranking among business schools is one way to measure the productivity achieved through better design, says Marty Powell, AIA of The Design Alliance. Since the new design of the Katz Graduate School of Business in The University of Pittsburgh's Mervis Hall, their ranking has improved in several categories including the recent number one ranking in the country for research productivity.

COMMUNITY-BASED *planning*

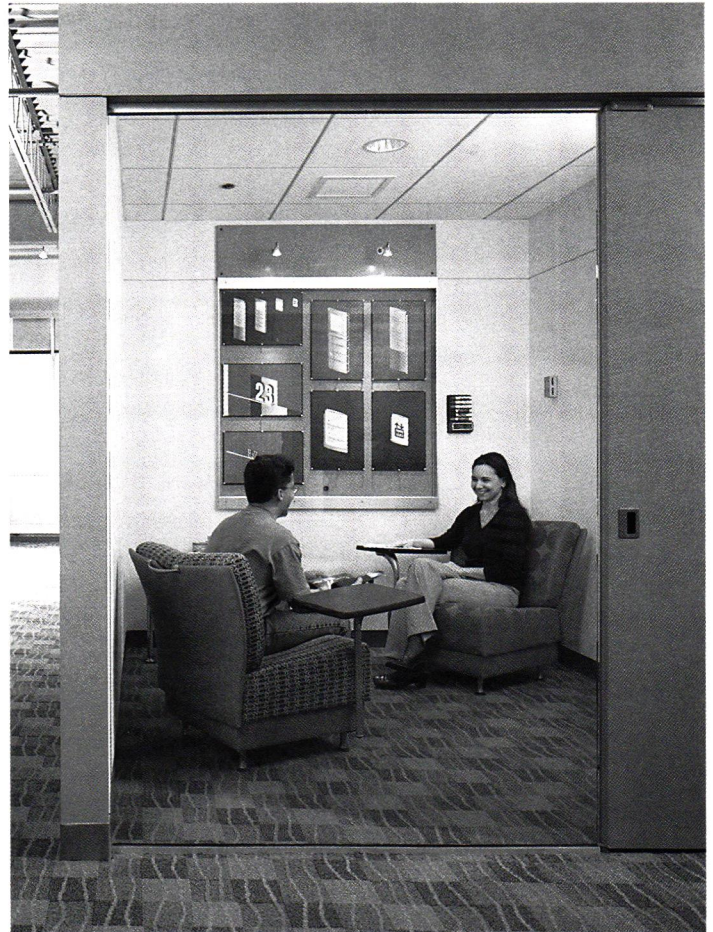
Communication Design Firm
Agnew Moyer Smith explores new
ways of collaborating at work.



The "square" at Agnew Moyer Smith, a multi-purpose area with café, was designed to get people together to foster cross-pollination of ideas.



In the project room, the red ball—dubbed the Power Ball by staffers—is a patent-pending hi-tech boom with power, ethernet, sound and VTA connections designed by Agnew Moyer Smith.



This enclave, one of four in the new offices of Agnew Moyer Smith, features lounge seating used for quiet work space such as private phone calls or meetings.

At Agnew Moyer Smith, a communications design firm, the entire staff of 50 was the first group to be involved in a new concept of office design called “community-based planning” through their client, Steelcase, and the architectural firm Archideas of Chicago. Prior to their move to new quarters on the South Side, Agnew Moyer Smith underwent a series of exercises and observation for a period of around six weeks. “There were all kinds of exercises we went through,” says Reed Agnew. “Group sessions, web-based tools, and photographs of things we liked and didn’t like.”

The purpose was to measure various dynamics within the firm to determine strengths and weaknesses in areas such as innovation, learning and decision making, work processes and communication.

“It’s really about mapping the real relationship and processes going on that aren’t really apparent,” Agnew explains. The origin of the community based planning—which, he notes sounds more like an urban planning term—came from a female biochemist at Berkeley named Stevenson, who was studying organisms and their relationships. Curious, she started looking at the large human relationships and ultimately developed the mapping techniques used in the planning.

“One of the big findings was our workspace is a total reverse of most offices—forty percent is individual and 60 percent is collaborative,” says Agnew. “With the high degree of technology, collaboration has to be effortless,” he added. “We don’t want to go the closet to get the projector.” Now, plug-ins are in the ceiling and projectors can be used anywhere.

The new design resulted in new work patterns. “We started doing things in a very different way. We stay in meetings to work after the meetings. We use the whiteboard, and we start drawing,” says Agnew.

As a result, “We’re able to go through concept phases and work out ideas much quicker,” he adds. “Anecdotally I know it’s working. People don’t like change,” says Agnew, but their reaction to the new open space, which is the feature case study on Neocon this year, is very positive. “It’s very different but everyone really likes it. I think it was very effective.”

Soon, the post-move research will be finished and the results will be in.

piyaf

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OUR MISSION

The Pittsburgh Interns and Young Architects Forum (PIYAF) is AIA Pittsburgh's component Young Architects Forum initiated by interns and young architects to:

1. Serve as an information resource to address the issues of architectural internship and continuing education as well as be a voice for the students, interns, and young architects in our local chapter.
2. Help educate employers about the Intern Development Program (IDP) and the Architectural Registration Exam (A.R.E.).
3. Help represent this early career development stage within our local chapter and provide a peer network for interns and young architects.

PIYAF is free and open to all interns and young architects (registered 0-10 years). Email: piyaf@yahoo.com

PIYAF Coordinating Committee

Joe Touvell, Assoc. AIA, co-chair

Arthur Sheffield, Assoc. AIA, co-chair –
Apostolou Associates

Lee Calisti, AIA – Lee Calisti architecture+design

Kenneth Stehle, Assoc. AIA – WTW Architects

2003/2004 ARCHITECTURAL REGISTRATION EXAM PREPARATION COURSE SCHEDULE

All sessions are scheduled for Thursday evenings in the coming months from 6:00 to 9:00 pm. Dates are subject to change so check your Friday email for updates. For more information contact PIYAF via email: piyaf@yahoo.com.

Associate Member News

Joe Touvell, Associate AIA and Art Sheffield, Associate AIA have been appointed the new Co-Chairs of PIYAF. Ken Stehle, Associate AIA and Lee Calisti, AIA have recently stepped down as co-chairs after nearly eight years. Lee Calisti was one of three original founders of PIYAF and Ken Stehle came aboard early in PIYAF's history. Both felt that it was time for fresh leadership to keep PIYAF going in the intended direction.

Joe Touvell has been active as a director in PIYAF since he came to Pittsburgh several years ago. In addition to assisting with many activities, Joe was responsible for creating the A.R.E prep course series, an early goal of PIYAF.

Art Sheffield has also been active as a director of PIYAF, helping to plan building tours along with many other activities over the years. Recently, Art was selected as the Associate member representative to the AIA Pittsburgh Board where he serves as the liaison between PIYAF and the board, and represents AIA Pittsburgh associate members at AIA Pennsylvania. In addition, he led efforts to develop an intern survey about AIA membership that is now available on the AIA Pittsburgh Web site. Art is working with Joe to develop this regular contribution to Columns magazine focused on associates and intern issues and promoting PIYAF and its activities.

Art and Joe have been excellent leaders and we look forward to great things ahead under their leadership. Lee and Ken will continue as active members of PIYAF using their experience to mentor newer members and promote PIYAF in a larger context.

Thank You

PIYAF would like to thank everyone who attended the initial Happy Hour at T's Restaurant and Lounge on Friday, September 19th. The lively event drew a record number of intern architects, young constructors, interior designers, engineers, and Carnegie Mellon University architecture students. Your enthusiastic participation and support is

greatly appreciated by all of us. This was our first endeavor towards bridging the gap between the allied professions, and creating an atmosphere where everyone can network, mix and mingle. We greatly look forward to seeing you again at the next Happy Hour in December.

Intern Survey

AIA Pittsburgh is conducting a very important survey of intern architects. This effort is to help the organization better address associate member needs. For your convenience the questionnaire can be completed online at www.aiapgh.org. Please participate in this valuable endeavor by providing your feedback, positive or negative. Your thoughts and opinions are crucial so that AIA Pittsburgh can effectively meet your needs as an associate member.

AIA Pennsylvania

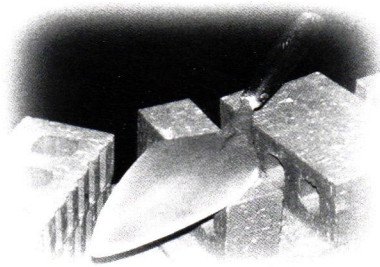
AIA PENNSYLVANIA ANNUAL MEETING AND STATEWIDE LEADERSHIP CONFERENCE.

This year's conference will be held at the historic Yorktowne Hotel in York, PA on Friday November, 21 and Saturday, November 22. The conference will have a lineup of interesting speakers, along with sessions geared specifically for the Associate AIA member. By attending you can earn IDP credits and gain valuable construction administration experience. All interns and young architects are encouraged to participate in this important event.

"MASONRY DAY" - Friday, November 21st - The AIA Pennsylvania Associates Committee has planned a masonry workshop for architectural students and interns in conjunction with the Annual Meeting and Statewide Leadership Conference. The International Masonry Institute (IMI) will provide a mix of lectures and hands-on activities to help educate students and interns on the intricacies of using masonry. This is a great opportunity for you to build and inspect wall assemblies and to work alongside experienced masons. We hope to see you there!

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International Masonry Institute

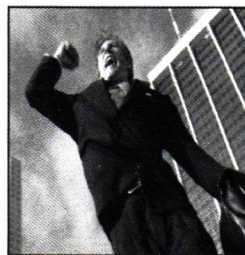
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From the Firms

► **WTW Architects**, in cooperation with Lyman, Davidson & Dooley of Marietta, GA, has been selected to design a 40,000 sf renovation of the Houston Building (below), the former bookstore at Georgia Institute of Technology in Atlanta, GA.



JSA Architecture Planning Engineering Interior Design has been selected by PNC Bank to redesign and renovate their branch bank offices on the first floor of their corporate headquarters at Fifth Avenue and Wood Street in downtown Pittsburgh. The 9,000 sf branch bank will represent the new PNC Bank prototype (below) being introduced into the Pittsburgh area. Architect is **Richard Oziembowski, AIA**; Jennifer Lindemuth is the project manager and interior designer.



PNC Bank Prototype

Ligo Architects has been retained by Pullman Trust to restore and/or expand historic Pullman Park in Butler. The baseball park is being upgraded to better service the 200 local league games which are played there each year.

The Mattress Factory Museum recently unveiled its \$1.5 million new offices and education space building. **Landmark Design Associates** was the project architect and engineering firm; early design drawings were done by **Jennifer Lucchino, AIA** and Rycon Construction was the main contractor.

General Industries, Prof. Affiliate, broke ground for the two story 74,000 sf Levin Furniture Showroom in Monroeville.



Robert Levine (left) and Don Ivill, President of General Industries.

Ragnar Benson, Inc. was awarded a \$12.5 million design-build contract for a new student housing facility for Fairmont State College in Fairmont, West Virginia.

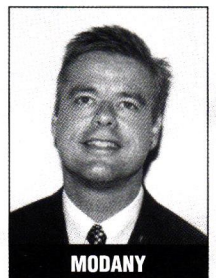
Dick Corporation was awarded the new 20-story \$60 million convention center hotel downtown from the developer Forest City Enterprises.

Business Briefs

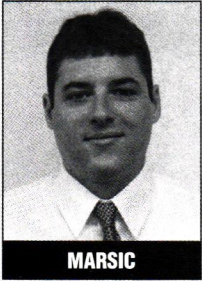
► Mark W. Tayman has joined The Kachele Group, Prof. Affiliate as a structural engineer. Mr. Tayman is a graduate of the University of Pittsburgh with a Bachelor of Science in Civil Engineering.

Continental Building Systems promoted Robert G. Modany to senior project manager.

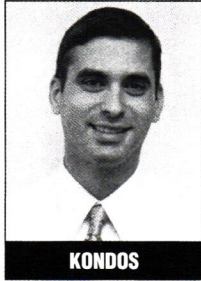
Continental Building Systems also promoted Traci McGavitt Yates to director of business development, Jack Berthold as project manager and Don Thornton as senior estimator.



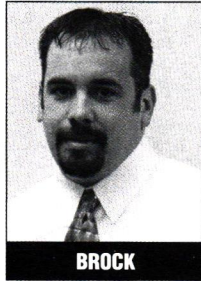
MODANY



MARSIC



KONDOS



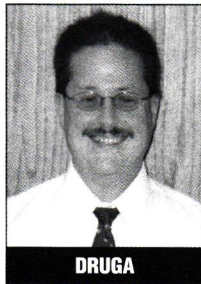
BROCK

Massaro Company recently hired Andrew Marsic and James Kondos as project engineers, Bradley Brock as an estimator, and Michael Druga as payroll administrator.

Kudos

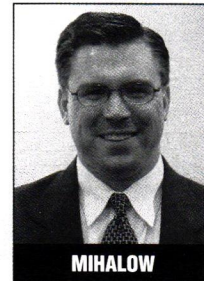
→ **Ligo Architects** has been awarded the Residential Golden Trowel Award by the Western Pennsylvania Masonry Institute. The winning project included the restoration of the Manor House and Carriage House as well as additions, renovations and construction of outbuildings on a 3,000 acre estate on the Allegheny River.

Lami Grubb Architects, LP has been named one of the 100 Fastest Growing Companies in Pittsburgh by the Pittsburgh Business Times. The Firm ranked 44th, with growth in sales of over 25% for the last year.

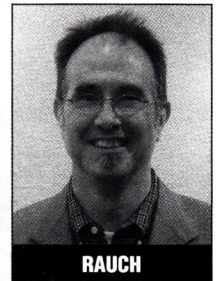


DRUGA

Dwayne Mihalow, Assoc. AIA and **Andrew Rauch, Assoc. AIA** of **JSA Architecture Planning Engineering Interior Design** have passed the architectural registration examination.



MIHALOW



RAUCH

Jimmy Goldman, AIA served as the aquatic consultant to the architectural engineering firm of Wendel Duchscherer Architect & Engineers, PC for the Steele Hall Natatorium at the SUNY Campus in Fredonia, NY which recently received an Honorable Mention Design Award from **AIA Buffalo**.

Massaro Company was recognized by the Pittsburgh Business Times as one of the Fastest-Growing Companies in the region.

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November 12, Wednesday to November 17, Monday

GREENBUILD '03

The US Green Building Council's International Conference and Expo will take place in Pittsburgh with workshops, lectures, special tours, an exhibit hall and exciting networking opportunities.

TOPICS INCLUDE:

- LEED Workshops
- Historic Preservation
- National Security & Sustainable Design
- Low Energy Heating and Cooling
- Lighting with Daylight
- Marketing Green
- Green Clients/Green Practices

For more information and registration please go to
www.greenbuildexpo.com

November 20, Thursday Pittsburgh, Pennsylvania

UNDERSTANDING THE ROLE OF THE COUNTER PERSON

TOPICS INCLUDE:

- Responsibilities of counter person
- Different types of regulations
- Review of zoning, planning, building codes and local ordinance
- Outline basic functions of a building department

Earn 12 LUs. Cost is \$245.

For more information on schedule, location and registration, contact Richard Piccolo at 847-884-4969.

December 16, Tuesday Pittsburgh, Pennsylvania

FIRE RESISTIVE CONSTRUCTION REQUIREMENTS

This class will enable you to have thorough understanding of requirements for fire walls, separation assemblies and shaft enclosures. Also, you will be able to determine requirements to protect use groups, fire areas, and multi-story buildings.

Earn 6 LUs and HSW credit. Cost is \$165.

For more information on schedule, location and registration, contact Richard Piccolo at 847-884-4969.

AIA ACTIVITIES

November 7, Friday

AIA Communications Committee Meeting Noon at the Chapter office.
412-471-9548

November 14, Tuesday

AIA Pittsburgh Board Meeting 5:00 p.m. at the Chapter office. All members are welcome 412-471-9548

AROUND TOWN

November 12, Wednesday

SDA Members Meeting. Please join SDA at their members meeting from 12-1:30 p.m. at the Engineers Club. Cost is \$17/members, \$19.50/non-members. Please RSVP with Cheryl Marlatt at 412-281-1337.

November 19, Wednesday

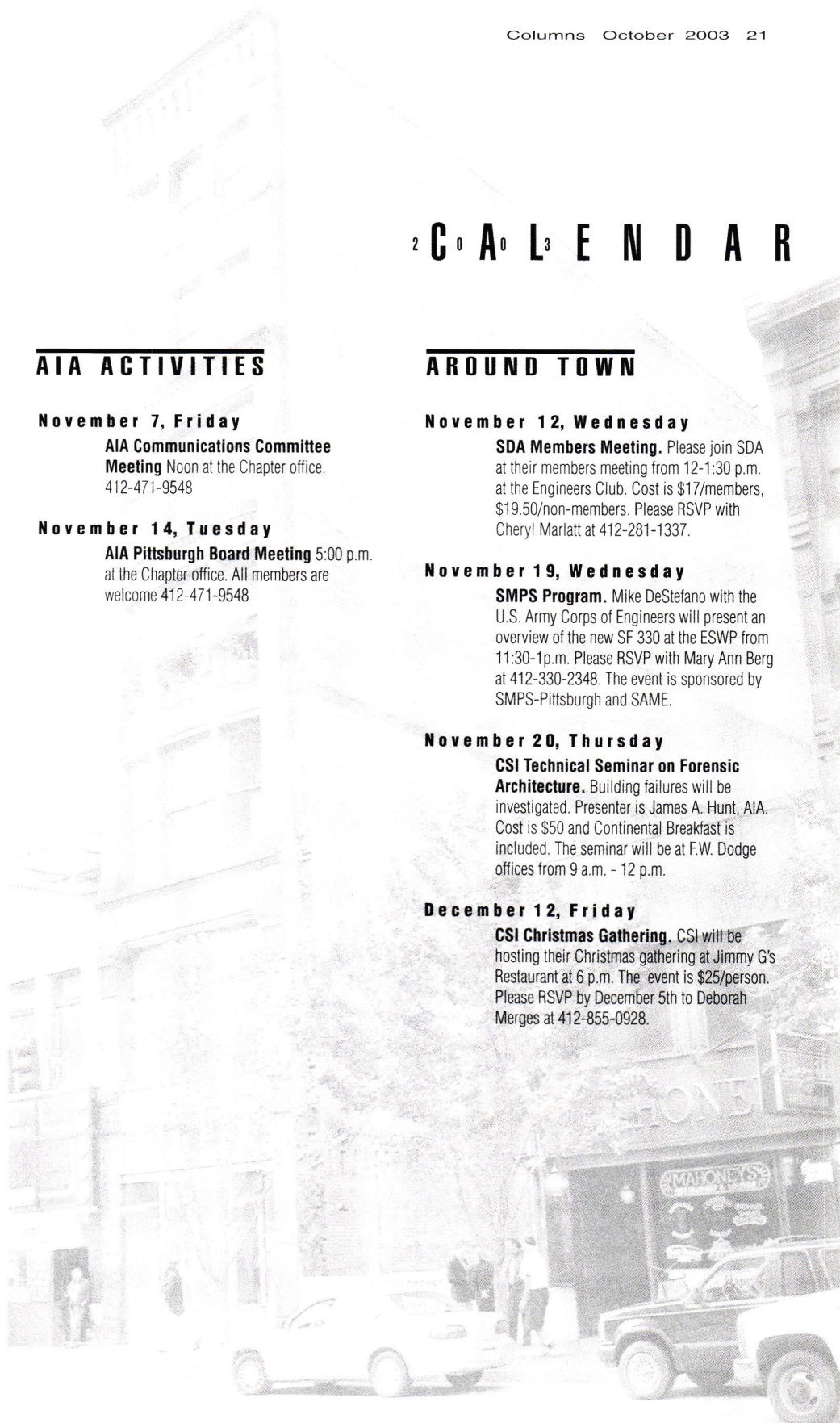
SMPS Program. Mike DeStefano with the U.S. Army Corps of Engineers will present an overview of the new SF 330 at the ESWP from 11:30-1p.m. Please RSVP with Mary Ann Berg at 412-330-2348. The event is sponsored by SMPS-Pittsburgh and SAME.

November 20, Thursday

CSI Technical Seminar on Forensic Architecture. Building failures will be investigated. Presenter is James A. Hunt, AIA. Cost is \$50 and Continental Breakfast is included. The seminar will be at F.W. Dodge offices from 9 a.m. - 12 p.m.

December 12, Friday

CSI Christmas Gathering. CSI will be hosting their Christmas gathering at Jimmy G's Restaurant at 6 p.m. The event is \$25/person. Please RSVP by December 5th to Deborah Merges at 412-855-0928.



AIA Pittsburgh is using e-mail to keep our members informed of the chapter's activities. If you would like to be included and are a member, please send your address to info@aiaapph.org

CONTRACTORS' DIRECTORY

*Member of the MASTER BUILDERS' ASSOCIATION.

A LISTING OF AREA CONTRACTORS AND THEIR PROFESSIONAL SERVICES. To include your firm in this directory, call AIA Pittsburgh at 412-471-9548.

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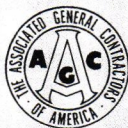
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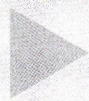
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HVAC *air quality and productivity*

Other industries are examining the link between environment and productivity. The American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) announced in September, 2003, plans for conducting a two-year research project to determine whether indoor air quality conditions in classrooms negatively impact children's health and performance in school.

"Research has shown that office work by adults is negatively affected by poor air quality. Work is improved by removing the source of indoor air pollution or by increasing outdoor air supply. It also has been found that temperatures in classrooms impact the performance of children," ASHRAE reported.

Improving ventilation is expected to reduce the incidents of allergies, asthma and Sick Building Syndrome that contribute to student absenteeism, a factor that can greatly affect school performance. The principal investigators of the project are David Wyon and Pawel Wargocki, Ph.D., of the Technical University of Denmark. In a similar study at the University, conducted by the International Center for Indoor Environment and Energy, researchers tested a 20-year old carpet, hidden behind a screen, for its effect on workers who were unaware of what was being tested. While temperature and ventilation were constant, the carpet was not. The results? Workers performed 6.5% better on a text entry task when the carpet wasn't present. Environmental researcher Judith Heerwagen claims this study is significant for showing a direct effect of air quality on performance.

The ASHRAE study will be carried out in occupied classrooms during school hours. Each experiment will simulate the environmental impact of a classroom HVAC upgrade by producing one or more of the following effects on the indoor environmental quality: reduced indoor air temperature and humidity in warm weather; better control of indoor air temperature; increased outdoor air supply rate leading to reduced levels of airborne pollutants; im-

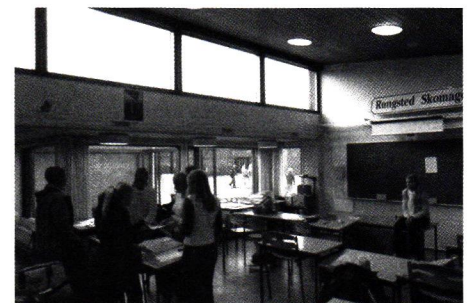


Air quality in schools, which is believed to affect learning, is influenced by two key issues: ventilation and off gassing. In the classroom featured here, Hayes Large Architects designed ventilation with systems that comply with the most stringent fresh air standards, and specified operable windows. To minimize indoor pollution, designers selected curtains, upholstery, flooring, ceilings and cabinetry with low off-gassing of harmful compounds.

proved supply air quality; and fewer respirable particles. "The trend is toward improving indoor air quality. It's a major factor in our industry," says one local HVAC expert. "Health issues are what are really controlling the codes and schools are a major area since the systems in use aren't effective in bringing in outside air."

None of this was much of a concern prior to air conditioning, he adds. Now codes require a minimum of outside air of 10 to 25%. In addition, the latest requirement is to track outside air so HVAC companies are providing air flow measurement stations that send signals back to the building automation systems, allowing adjustments as needed.

For office workers and students alike, new technology means a breath of fresh(er) air.



The ASHRAE study will be carried out in occupied classrooms, such as this one, during school hours.

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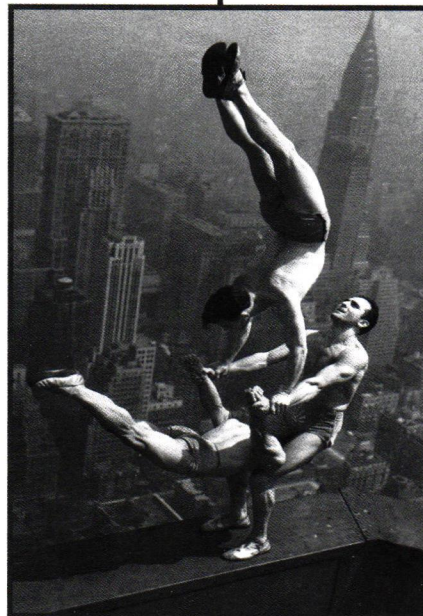
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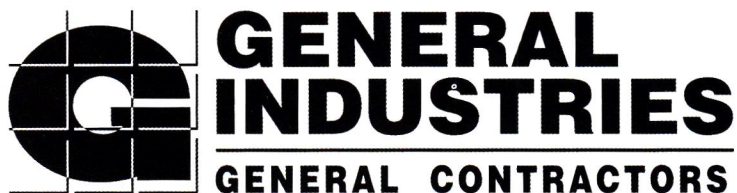
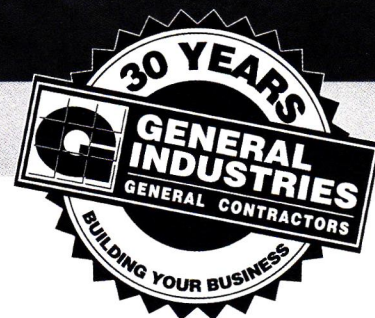
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