officeinsight 1.16.06

To read a poem is to hear it with our eyes;
to hear it is to see it with our ears.
Octavio Paz

2005: The Year in Review

2005 saw numerous signs of the contract furniture industry's economic recovery. The major manufacturers responded to clients' needs by introducing well-designed products at unusually low price points, developing more solutions for the healthcare and educational sectors, and studying the ways technology and sustainability are transforming the workplace.

Full Story, page 3

Office Design Intervention: When the Owner Gets Involved

The science of building performance is approximately 30 years old, and its knowledge base is quite deep. Yet building performance standards are used on very few projects in the United States. The perceived incentive to use these standards is not strong in the design community, and many do not understand them or accept these standards as desirable design constraints.

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A Random Walk

*office**in**sight* Celebrates 10 Years

*office**in**sight* has just completed its 10th calendar year of publication. We tested the water with our first publication on October 16, 1995, and began our weekly publication schedule in January of 1996.

Full Story, page 11

Jofco Allies With Bill Gross Associates

B**ill Gross Associates**, an independent sales rep firm in New York City, has become **Jofco's** sales representative for the metro New York territory, which includes New York City, Long Island, Westchester, Fairfield County, CT and New Jersey north of Princeton.

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Office Design Intervention: When the Owner Gets Involved

by Steve Orfield

The science of building performance is approximately 30 years old, and its knowledge base is quite deep. Yet building performance standards are used on very few projects in the United States. The perceived incentive to use these standards is not strong in the design community, and many do not understand them or accept these standards as desirable design constraints. In the facilities community, there is more use of the standards, but there is still much educational work to be done, particularly so that the implementation of standards does not conflict with the work of design professionals.

It has been well documented that most building problems, and most complaints from building users, come from a failure to meet building performance or "comfort" standards. Acoustic complaints are common (speech privacy and loud HVAC systems), as are thermal, lighting, daylighting and indoor climate complaints. This clearly points to the conundrum of poor knowledge transfer between specialty consultants and design and owner communities.

Over many years in the building-performance consulting business, Orfield Labs has completed innumerable office projects with design teams across the country. We are also contacted every year by a number of clients asking for second opinions' on design projects in process. These generally originate with a call from an upper level facilities executive or from company or institutional top management. The conversation often goes like this, *"I understand that you are experts in building performance. I have just broken ground on a new building (or have completed plans on a new project), and I am losing confidence in the abilities of the design/development team regarding the completed projects performance*."

Clients that contact us generally have had experience with more than one building project, and have become more acutely aware of building-performance problems. They range from medium size firms constructing 100,000 square foot buildings to aerospace firms building 600,000 square foot world headquarters. Usually, there is a facility professional involved, but not always. And usually, top management is involved.

The client often talks about concerns with answers to building performance questions, but often this concern is intuitive rather than analytical. The owner or facilities professional thinks something is wrong or not completely thought out, but they are not sure. Sometimes the client believes that their questions are being 'fluffed off' with simplistic answers or answers that make no sense. In all cases, the client believes that the design team should be better informed regarding the performance concerns.

This initial call-in follows with a sending of plans and specifications (whatever is available) and with a meeting to discuss a 'building performance review' of the project in question. This review covers occupant comfort issues such as acoustics, vibration, daylighting, lighting, thermal comfort, indoor air quality and human factors issues.

▶The client questions that are often not satisfactorily answered are questions such as:

▶Can you reassure me that the acoustic privacy will be good enough?

▶Will the HAVC system be noisy?

▶Will the private offices be private?

▶How will you determine if there is too much or too little daylighting?

▶Will my employees benefit from daylighting or will it cause glare?

▶Why did you select the glass that you are recommending?

▶Is the expense of exterior daylight shielding recoverable, and what are the other benefits?

▶How will the cubicle layout work with different comfort variables? Will they be thermally, visual and acoustically comfortable?

▶How will you insure indoor air quality?

▶Why are you specifying direct or indirect lighting?

▶Why are you using (or not using) task lighting?

▶Do the colors in the space have impact on the daylighting and lighting

Steve Orfield

▶Will the space be comfortable near the windows?

▶Will the space be noisy?

These questions are usually about things that may later engender complaints or call for financial justification of design issues. Clients are often being asked to accept design decisions without understanding the outcome of those decisions. In some cases, the questions come after the project has been completed and lead to assessment and often remediation. It is safe to say that any building that was designed without building performance standards will have a series of measurable problems in need of remediation, the most common being an HVAC system that may never reach comfort criteria, without intervention, during the life of the building.

Design Interventions

Two interventions may serve to illustrate building-performance concerns of owners/facility managers. One of these was a 100,000+-office building and the other was a combined office – factory of about 400,000 square feet. A better understanding of these concerns may help design professional avoid performance pitfalls.

Display Firm

One of the nation's largest convention display manufacturers was in the process of breaking ground on a new Headquarters Building in the Midwest when I received a call from one of the owners of the firm. He explained that a design-build team had been retained to build a new HQ, and that the task was to combine to office buildings and one factory building in a new 'big box' structure, with no division between office and manufac-

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turing. The company owners wanted to insure that all employees could see the final product of their work in the center of the building from their seated work positions.

The design team, who designed this large open space and proceeded to break ground, accepted this premise for a new building. As this point was reached, the President began to question the suitability of placing these populations together, with particular concern for acoustical issues. Orfield Labs was retained to critique the building as it was being built.

A pre-occupancy study was performed, considering each of the 17 different departments, and the results of this pre-occupancy study were used to compare the upcoming new building with the existing buildings that were currently occupied by this population. The resulting study suggested that if the current plans were followed, the acoustical, daylighting and visual environment of most of the employees would reduce dramatically in quality, when compared with what they currently occupied.

As a result of this critique, a major redesign of the daylighting, lighting and acoustical environments was undertaken. Daylighting was modeled, and changes in daylighting design doubled the amount of daylighting in the space while better controlling it. Color reflectances were changed to support more daylighting level. The standard factory HID lighting system that would have lit the production spaces was rejected due to its high levels of glare for much of the population, and a new lighting system was designed. The entire building was treated with acoustical treatment to reduce the impact of a contiguous production and office facility. Finally, the noisy portions of the factory were separated by full height walls from the remaining building.

While the building type under construction was a difficult one, the owner took the initiative, late in the process, to dramatically improve the facility and was quite successful in that intervention. Had he not taken this initiative, the project would have gone into an immediately remediation after completion of the construction, at great additional expense. Both the client and the architect were supportive of the analysis and changes.

National Credit Union

A national credit union affiliated with a Fortune 500 firm was in the process of working with its architect on the design of a new corporate headquarters that was to be innovative in both design and performance. The architects retained were known for high style, well-detailed modern office buildings.

Late in the design process, a top officer of this credit union called and said that the company had just broken ground on a new 100,000+ square foot office building, and that he and the president wanted a second opinion on certain functional aspects of the design. The next morning, we spent a number of hours discussing and reviewing the project. Their concerns related to daylighting, glazing, lighting, acoustics and thermal comfort. A day later, the two executives authorized a critique of each of those aspects of the building design.

With regard to daylighting, the executives had asked design firm to provide a glazing selection that would negate the need for window treatments, and the architect came back with a recommendation for 30% transmissive dark glazing. In addition, the architect designed an exterior sunshade along the long west face of the building to shield the building from heat build up.

National Credit Union

An analysis of these issues suggested clear problems. First, there is no glazing that will preclude the need for window treatments. Direct sun must be redirected rather than modestly reduced. Any other analysis is simply a failure to understand the basics of daylighting. Second, the exterior sunshade placed on the West face of the building was actually a South-facing design that had not been modeled for its impact on the building. Modeling clearly showed that it was not a correct solution. Our glazing recommendations were to bring the glazing back to a clear glass (the location of the building is cloudy 2/3 of the time, and there is no clear reason not to have daylighting available during these periods.) With regard to the sun shading, a new system was designed for three faces of the building that was specifically modeled for the South, East and West faces. And the finish of this sunshade was lightened considerably for better efficiency, and its gloss was reduced considerably, to reduce indirect glare from sunlight reflecting off the shade.

An assessment was made of internal color selections, and much of the measured values were too low to easily support daylighting and visual comfort. Better standards were developed, and higher reflectance finishes were requested and selected.

With regard to interior lighting, an indirect-only lighting system had been selected, which would have provided very little lighting contribution to task surfaces and caused excess brightness at the ceiling. This was a less than ideal system for visual comfort at VDTs. This was changed to a daylight controllable direct-indirect system, plus a task lighting system, which were far more efficient and far more visually comfortable.

The workstations and layout were not the architect's responsibility; a local office furniture dealer had been retained for this purpose. This dealer was working with one of the largest office furniture manufacturers in the U.S, and the workstation designs came from that manufacturer. Since we had some real concerns about local workstation quality, their workstations were assembled in our open plan lab and critiqued. Occupants were invited to take part in the discussion and process. The result was that occupants, who would have been facing into corner workstations, were now facing toward the opening of

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their workstation. Instead of being surrounded by three work surfaces, they were sitting at freestanding tables, and money captured from eliminating one work surface was spent on buying articulated-arm, flat panel displays. Their final configuration was similar to a standard private office, with glazing for daylight penetration, and far more free floor space to move around in.

Finally, a ceiling and sound-masking critique were done, and system changes were made to increase the privacy performance of the office spaces. The results of this study were dramatic in terms of building appearance and performance, and the client was convinced of the value of the results of the significant changes. In the end, the architect believed that this was a superior set of solutions and was equally pleased.

Summary

These two cases are examples of countless building critiques which have been done late in the design process, and there has always been significant benefit for the client. This process requires activist owners and facilities managers, and it requires the cooperation of the design team whose designs are being formally reviewed for performance. It is often a political process to bring the design team into the performance arena, but many design firms find this process invigorating, bringing with it the potential of expanding their office design expertise.

Performance standards have been incorporated in a program at our Open Plan Working Group, entitled, Certified Building Performance Standards. This program provides owners with a set of standards (which are updated periodically) that can be given to the design team at the time of interviews, and then used as benchmarks for the analysis of design success. These standards include examples of design practice and very detailed descriptions of the testing that will be done to verify performance. By simply enforcing building performance standards, many clients are able to avoid most of the complaints that come with the opening of many new projects.

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Steve Orfield is founder and CEO of Orfield Labs.

Much useful information on acoustics, daylighting and lighting can be found in two publications that have been supported by Orfield Labs'`` OPWG, one released last year and one to be released this year. Both can be downloaded from www.asid.org:

Better Sound Solutions, ASID, S.J. Orfield, and Jay Brand, Ph.D.

Better Lighting and Daylighting Solutions, ASID, S.J. Orfield, Jay Brand, Ph.D., and Pekka Hakkarainen, Ph.D.

The Open Plan Working Group is an office occupancy research group which was founded in 1998 to support the application of building performance science and occupancy research science. It's intent is to refocus design toward the measurement of its benefit to occupants, and it provides services in building performance standards, design and occupancy research.

It is sponsored by Herman Miller, Lutron and Day-Brite Lighting, and it has a Design Advisory Council which includes 13 of the top office design firms in the United States, including Gensler, DEGW, Mancini Duffy, Skidmore Owings and Merrill, The Hillier Group, NBBJ, RTKL, DLR Group, Perkins and Will, Leo A. Daly, Studios Architecture, Shashi Caan Collective and GSA The OPWG meets twice annually in Minneapolis at Orfield Labs, and we invite your participation of facilities professionals and design firms who would like to join the DAC.

For information, please contact Orfield Labs' coordinator: Sherry@orfieldlabs.com

Orfield Laboratories is the only multidisciplinary, analytical and subjective consulting firm in architecture in the United States. We practice in daylighting, lighting, acoustics, thermal comfort, indoor climate, human factors and occupancy research across all commercial building types. In addition to our building performance practice, we consult in perceptual quality via the use of subjective research regarding the sensory impact of products and environments, much of this work is described under our trademarked processes of Perceptual Market Research and Perceptual Branding. We also serve the Fortune 500 in product development, testing and research.

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