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Incubator Facilities 101

*Consultants and Managers Share Advice for
Designing Buildings That Work*

by Brian Walker

When CityWide Development in Dayton, Ohio, hired **Jeff Wray** as architect of The Entrepreneurs Center in early 1999, the technology incubation program was still at the earliest stages of development. The CityWide team wanted to involve Wray from the onset to ensure that the 35,000-square-foot facility would complement and enhance the program rather than limit the services it could offer. So, long before Wray sat down at the drafting table, he and the incubator development team researched business incubation together.

In Kalamazoo, Mich., Chief Operating Officer **Sandra Cochran** met with building design experts **William Hartzell** and **William Bailey** nearly every week during the six-month planning and design process for the 58,000-square-foot Southwest Michigan Innovation Center (SMIC). Once construction began, Hartzell and Bailey, principals of the architecture, engineering and design firm Facilities Solution Group (FSG) in Elk Grove Village, Ill., were on site every two weeks. Hartzell and Bailey still travel to Kalamazoo monthly to show potential clients of the technology and life sciences incubator how their firm can design unfinished incubator space to meet each company's unique needs.

These incubator developers understood the importance of engaging consultants early in the facility design process to ensure the resulting plans meshed with the incubation programs' goals and their future clients' needs. They also recognized the need to maintain regular communication with their consultants to keep the design process on track. Following these two basic rules helped get The Entrepreneurs Center and the Southwest Michigan Innovation Center off on the right foot. Read on for more advice about designing appropriate incubator buildings from facility experts and incubator managers who recently completed new construction projects.



Facilities Solution Group, an architecture, engineering and design firm in Elk Grove Village, Ill., uses computer-rendered drawings of office suites and labs to help incubator clients envision where furniture and lab equipment will fit and to help them decide how much space they need to rent.
Image courtesy of Facilities Solution Group

RESEARCH, RESEARCH, RESEARCH

One of the first things Wray did was to purchase the NBIA publication [Bricks and Mortar: Renovating or Building a Business Incubator Facility](#). He then accompanied the incubator development team as it visited other incubation programs throughout the state to see firsthand what was and wasn't working in terms of facility design.

The team learned that many incubators put too much emphasis on high bay areas for manufacturing, so they planned areas that could easily be fitted for either office or manufacturing space. The research helped with aesthetic considerations, too. After **David Cattey**, executive director of the Business Technology Center in Columbus, Ohio, mentioned that offices with windows have become premium space at his incubator, Wray developed a double-corridor building that allowed every suite to have at least one wall with windows.

Another thing the team noticed was that many incubator office spaces neglected client privacy in an attempt to encourage networking. "We saw that many offices with windows into the hallways were covered with printer paper or shaded with blinds," Wray says. "We realized that there's a tension inherent in an incubator community: Everyone wants to know what's going on, but that exchange of information needs to be controlled for the sake of privacy." So Wray designed the building with solid office walls and doors, but made sure the fire code did not require the office doors to be closed or have auto-closing features. "That way we gave the choice of privacy to each client."

Cochran's design team also visited several incubators with the goal of understanding facility best practices as well as practices to avoid. "One of the things we learned we really had to do was to provide adequate back-up power for each laboratory pod," Cochran says.

Cochrane says her team also learned not to centrally pipe gases and deionized water. She says the cost of centrally installing pipes for gases and deionized water is high and the incubator would have to charge all clients for that infrastructure regardless of whether they used either amenity. Additionally, she says, there is a risk of system-wide water contamination if every faucet is not run on a regular basis to keep the water fresh.

Instead, the incubator provides a central, shared source of deionized water and provides each client the option to have the gases it needs available in private gas closets.

"By having a small [deionized water] dispensing area and gas closets for individual lab use, the costs are kept low and paid only by those that choose to use them," Cochrane says. "Having one dispensing area means that the water is run on a very regular basis and if contamination should occur, the lines are shorter and thus faster, easier, and cheaper to clean."

EXAMINE CLIENT NEEDS

When the Advanced Technology Development Center (ATDC) in Atlanta constructed a new 122,000-square-foot facility in 2003, its development team had a good understanding of the types of entrepreneurs who would use the facility. "We got to base much of our facility decisions on our 20 years of incubator experience and the fact that we'd been working for the past couple of years with the same clients who would be renting space in the new facility," says **Chris Downing**, ATDC associate director.

The ATDC design team took current clients' needs into consideration when constructing the new facility. "We surveyed our current member companies for the features that they liked and disliked in our current facility and asked for ideas to create a productive workplace," Downing says. The team took these ideas to a local architect, who used the information to incorporate features such as modular walls and furniture, company signage, and convenient client parking.

Bailey and Hartzell agree that company representatives are a great source of design information, but in many cases, facility designers are planning buildings for new incubation programs that have no current clients to consult. In designing SMIC, they overcame this obstacle by interviewing companies the incubator admitted in advance and by talking with local companies similar to those the feasibility study had identified as likely incubator clients.

FSG produces computer-rendered drawings of clients' office spaces based on these interviews. According to Bailey, familiarizing clients with these drawings increases the likelihood the finished space will meet expectations. "And for those times that we get a client that has a hard time visualizing, we'll spend some more time and create a

3-D rendering. That way, when we talk about something like the possibility of taking out a wall to expand in the long term, the client knows exactly what that will mean for the office."

This process allows the incubator's staff and potential clients to have a solid idea of what to expect from their office space before the ground is even broken. It also gives the design team a sounding board for new layout ideas. Hartzell has found many design ideas he's been excited to suggest were not features companies said they'd use. "In those cases we just change our game plan," Hartzell says.

Cochrane says FSG's computer-rendered layouts were important components of her team's design process. "Sometimes clients have an unrealistic idea of what they can fit onto a lab counter, or they forget about the floor space taken up by things like waste cans, lab carts, computer servers, gas cylinders, or chairs and tools," she says. "Seeing everything laid out ... helps them visualize what they can really fit into the space and how many people can work in the lab."

On more than one occasion, Cochrane says, clients decided to rent more space than they originally thought they needed after studying the computer-rendered layouts.

PLAN FOR FLEXIBILITY

Flexibility is crucial to any incubator facility. The ability to accommodate multiple types and sizes of client companies will help an incubator maintain high occupancy and attract diverse companies.

The ATDC development team made flexibility a top priority when constructing its new facility. ATDC utilizes demountable walls throughout the facility that allow the incubator, for example, to double an office suite's size simply by removing the wall between two suites. Client suites also feature demountable walls, so clients can create private offices within their suites. "Our ability to be flexible with client space has saved us time and money already," Downing says. "It allows us to turn space quickly from client to client."

Demountable walls turned out to be too costly for The Entrepreneurs Center's budget, so Wray developed a facility that was flexible in a totally different manner. "Rather than build a facility where you move walls, we [made] a facility where you can easily move people," Wray says. He designed three different types of office suites: 450-square-foot basic office spaces; 675-square-foot lab areas; and 1,350-square-foot manufacturing areas with higher



The Advanced Technology Development Center in Atlanta uses demountable walls throughout the incubator. These walls allow incubator staff to reduce or enlarge office suite size for new clients. Incubator clients also can move walls to create private offices within their suites.

ceilings and easy access to loading docks. "As a business grows, it can move from one space to another space or even add a new type of space onto its current lease," Wray says. **Barbara Hayde**, president of The Entrepreneurs Center, says most clients have chosen to retain their original spaces, but often reserve additional adjacent space as they grow or need different types of space.

CAREFULLY CONSIDER TECHNOLOGY INFRASTRUCTURE

Whether an incubator will serve high technology companies or service firms, technology plays a huge role in an incubator facility. All clients have basic technology needs, such as heating and cooling, and some clients have more specific needs, such as access to gases.

"Choosing the right technology to control heating and cooling in your facility is extremely important," Wray says. "Since the sizes of our office spaces varied and we didn't know how much was going to be occupied or what sort of machinery would be present, we had to choose a system that would be flexible and offer individual choices for clients."

So The Entrepreneurs Center installed a "packaged through-wall air conditioning" (PTAC) unit for each 15-foot by 30-foot area of office space (for example, a 675-square-foot suite utilizes two PTAC units). The units are easy to install and slide into sleeves built into the incubator's exterior walls. By using this system, The Entrepreneurs Center can allow its clients to control their own environments without opting for a much more expensive zone-controlled central heating and cooling system. At \$625 apiece, the units are economical but will last only about 10 years before needing to be replaced, Wray says.

Hayde says that so far, most of her clients have had similar power needs, so individual billing hasn't yet been necessary. "We have the ability to charge based on usage [of the PTAC units] but we don't," she says. "But we do have a clause in the lease alluding to the fact that we monitor usage and if we begin to get spikes we will do a study and charge the offending client a surcharge."

Another important technology consideration is electrical wiring. Wray used a bus duct system at The Entrepreneurs Center rather than running traditional electrical wires through the building because it provides incubator staff more flexibility than traditional wiring systems when modifying client suites.

A bus duct consists of three bars of electrically charged conductors that run the length of a facility. Bus plugs can be installed anywhere along the duct, allowing for easy placement of electrical panels. Since the duct relays pure electricity, it's the plug that allows incubator staff to choose the voltage and amperage that each outlet will receive. "We can give a client an outlet for any wattage they want simply by putting a different plug in our bus duct," Wray says. And, for about \$100, incubator staff can install a meter on any bus plug. "So you could charge a person individually for his or her electricity, or charge for a single piece of machinery," Wray says.



The Entrepreneurs Center in Dayton, Ohio, chose to run a bus duct system in its facility instead of running traditional electrical wires because of the flexibility the bus duct system offers.

The Entrepreneurs Center's bus duct runs between the first and second floors, so the incubator is able to route the electricity for both floors from the single duct. Another advantage of using a bus duct is that if the incubator ever expands, contractors can simply add extensions to either end of the duct. "Plus, we never have to open the walls to make changes," Hayde says.

Data wiring is a separate consideration. Bailey's rule of thumb is that a building can never have too many network ports. "We put in extra data ports wherever we can," he says. "Nowadays, even lab tools need to be plugged into a local network." Bailey also likes to include multiple telecommunications rooms, at least one on each floor.

For the Southwest Michigan Innovation Center, FSG designed a plan that features two electrical rooms and two computer rooms – one for each of the building's two wings. The electrical rooms are on the first floor and the data rooms are on the second floor. "This design has worked well because the heat generated by the electrical equipment is not good for the computer equipment," Cochrane says. "Keeping them separate has ensured the data rooms maintain appropriate temperature for optimal operation."

ENCOURAGE NETWORKING THROUGH DESIGN

ATDC designers wanted to encourage client networking but faced a challenge: promoting interaction in an incubator spread over three floors.

One strategy they used was to place almost all of the lab space on the third floor, consolidating client office space on the first two floors. This layout created a compact critical mass of entrepreneurs. On the two office floors, the design team encouraged networking by making sure entrepreneurs would see each other in the hall: They spread out 10 conference rooms, multiple break rooms, and a business service center that housed the incubator's shared copy, print and fax equipment. They also created



an open reception area near the elevators to encourage entrepreneurs to interact when traveling between floors. In all, 14 percent of ATDC's new facility consists of common areas meant to encourage interaction.

Hartzell believes an incubator's facility design can play a major role in client networking. "We subscribe to the chocolate and peanut butter theory," Hartzell says. "The trick is to get these bright people walking down the same street together – eventually they'll run into each other and good things will happen."

So FSG integrates design features that spark interaction. One strategy is to build alcoves adjacent to lab areas so entrepreneurs can chat while waiting for experiments to complete or for their turn in the lab. One of Hartzell and Bailey's favorite design tricks is to install white boards in conspicuous places, such as hallways. "Technology guys just really seem to love their white boards, so we thought we'd give them even more opportunities to chart their ideas," Hartzell says. And sure enough, upon follow-up visits, Hartzell and Bailey almost always see hallways scribbled with flow charts and brainstorming sessions.

This page was last updated on **24 January 2005**
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