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Office Exploration

by Michael Nolan, Ric Pulley, Bob Colletta

Emerging trends in building and workplace design.

Tough economic times have had the commercial real estate market scrambling to adjust. By the end of 2002, office vacancy rates in cities from Boston to Detroit to San Francisco climbed close to or above 20 percent. At the same time, new technologies and innovations in office development and workplace design continue to arrive. The combination of these two trends is changing how buildings are designed, leasing strategies are developed, and interiors are organized and furnished. Today's uncertain climate is causing adjustments on the part of developers, property owners, and tenants. There are a number of building design trends involving materials as well as locations that reflect the changing times.

Building and Interior Workplace Trends

Tilt-up construction. Tilt-up construction has continued to be an economical choice, offering lower costs, greater efficiencies, and the possibility of faster approvals. The use of tilt-up construction grew a total of 111 percent from 1995 to 2000, according to the Tilt-Up Concrete Association (TCA). With new construction techniques, four-story tilt-ups are now more feasible; in the past, most such buildings required the developer to erect a three-story panel and then add a one-story panel. Today, an entire four-story panel can be lifted into place, as with the Weston Corporate Center II, an 82,000-square-foot office building in south Florida. In addition, projects such as the Twilight Center Office Building in Bellevue, Washington, make use of the curved facades now possible with tilt-up construction. These innovations allow faster, less expensive construction, minimizing the developer's risk.

The corporate village. There has been an increasing demand for villagelike corporate headquarters, with citylike streets, individual neighborhoods, and community areas. In the Detroit area, an automotive supplier is constructing a new campus that will comprise from 800,000 to 1 million square feet and house 4,000 employees when completed in mid-2004. A new villagelike concept will feature a manmade lake and nature trails. A five-story central building will hold meeting rooms, offices, banks, a post office, coffee shops, and restaurants. The adjacent buildings will contain offices and development labs, and none will be higher than four stories. The intention is to create a small-town feeling, in contrast to the typical sprawling suburban office park.

Spec office development. In Phoenix, developers are willing to pay extra to take speculative office buildings through schematics and entitlements and then wait for tenants to customize them. Because the vacancy rate in Phoenix is around 20 percent across all office markets, developers have faced a challenge in attracting tenants to speculative office buildings, since tenants already have a range of choices with existing buildings they can move into quickly. However, tenants choosing existing buildings compromise their ability to customize the space for their particular business and program. The middle route is to reduce the development time by obtaining entitlements—including design review—early, and by moving the design documents close to completion, while still allowing some flexibility for customization.

Minor changes can be made to the number of stories in a low-rise building after the design has been approved. In some markets, a developer can get over-the-counter approval to change an approved design from four to three stories, or to open up the floor plate by moving the core. This

approach can take three to four months or more off the development schedule for a custom-tailored design while also reducing risk.

From furniture systems to office buildings. Many buildings are being designed to emphasize efficiency and worker comfort, offering operable windows, daylighting, and individual controls for HVAC. The package includes the building shell, a fixed core, and raised floors for HVAC and data and power cables, as well as landscaping. Furniture manufacturer Steelcase, known for turnkey office systems, has teamed up with commercial real estate developer the Gale Company to form Workstage, which offers turnkey office buildings. Borrowing the modularity and flexibility of the Pathways office system, a kit of parts allows customers to configure buildings to meet specific needs.

One size fits all. More and more, egalitarian layouts are becoming the norm. Charles Schwab & Company, Inc., wanted to keep its electronic brokerage group in San Francisco, and took space in a recently renovated seven-story building with 48,000-square-foot floor plates. The architects reorganized the space to provide equal access to light and views, with primary circulation along the perimeter and open workspaces near the windows. Individual offices are placed along the building core. Another trend found in many offices is that all workstations conform to one size and all private offices conform to another size. The new Phelps Dodge headquarters, for example, features an eight-foot by ten-foot standard cubicle size for the open offices, and a ten-foot by 14-foot standard size for the private offices. These standards give companies much greater flexibility in facility management.

Sustainable design. Despite the economic downturn, corporations and institutions in many regions continue to demand sustainable design. The U.S. Green Building Council (USGBC), which developed the Leadership in Energy and Environmental Design (LEED) green building rating system, has begun a pilot program for applying LEED standards to interior workplaces. The USGBC plans to use data collected from 50 pilot projects during a yearlong period to make changes before launching the program publicly in 2004.

Government clients are particularly interested in sustainability; in fact, the LEED for Commercial Interiors Rating System (known as LEED-CI) pilot program is being funded in part by a grant from the General Services Administration. But demand for sustainability depends on the region. For example, in the Southwest, office developers have been less interested in it due to their focus on lowest initial cost to accommodate quick resale.

Energy-efficient design and improved lighting have been shown to have a strong correlation to productivity. Lighting that individuals can control is essential to avoid glare, which can produce fatigue, eyestrain, and distracting reflections on computer displays. Daylighting has been shown to reduce energy requirements and to improve productivity. West Bend Mutual Insurance's new building in West Bend, Wisconsin, reduced energy use 40 percent with energy-saving lighting and a more efficient HVAC system that gave workers direct control over their environments. Absenteeism dropped 15 percent at International Netherlands Group Bank in Amsterdam after the bank built a new headquarters that relies on passive solar heating, insulation, and natural ventilation to control temperatures and reduce energy use.

Staying put and plug and play. Refurbishing existing space rather than moving can also be an attractive option. Because of a favorable leasing environment, corporate clients of all sizes are choosing to renegotiate their leases rather than take on the costs of moving. Often they can get generous renovation allowances as incentives to stay put.

Many vacated high-tech and dot.com spaces in urban centers contain leftover furniture, data cabling, and other infrastructure that was hardly used before the dot.com bubble burst. As a result, these offices are ready for "plug and play": tenants in need of fully functional space in a hurry can move in and get rolling quickly. In some cases, property owners are finding it necessary to remodel first to make the space more generic, removing some of the industrial appearance specific to dot.coms to attract a wider range of tenants.

Leasing Trends

Tenants who define their needs first. Some companies are taking advantage of the tenants' market to define their own needs first, and then to seek a building that fits these needs. In the late 1990s, Phoenix, Arizona-based Phelps Dodge Corporation, had an opportunity to reduce occupancy costs. Before turning to a developer or landlord, it assembled a team consisting of a broker and an architect to look at internal needs first: what the office plan would need to include, how big the floor plates should be, the ideal number of stories, etc. Only then did they look at what was on the market. They selected 12 opportunities in Phoenix, ranging from existing buildings to empty sites, and evaluated each option against their ideal model.

The firm had two criteria: the best fit with the ideal model, and the best lease rate. As it turned

out, the location that ranked highest according to the best fit also turned out to be the least expensive. By defining its needs first, the firm was able to negotiate with a number of developers and find the one that could match these needs. Phelps Dodge signed a ten-year lease for 180,000 square feet in a 460,000-square-foot building. The new corporate headquarters exists as a building within a building, with its own lobby, elevator, and a parking area separate from the other tenants.

High-quality developments still have an advantage in many major office markets. Leases are always turning over, and high-quality and/or unusual developments have a competitive edge in a downturn, when tenants are looking to move into better spaces and take advantage of lower rates. In San Francisco, for example, Foundry Square and the Ferry Building, both offering transit access, high-quality finishes, and distinctive design, are experiencing more leasing activity than many other projects. The buildings also have unusually large floor plates, a rarity in San Francisco's central business district. In Washington, D.C., a bland 1960s-era building, 1717 Pennsylvania, was reclad and renovated to permit views of the White House, one block away. The repositioned property became a Class A building, was fully leased within 12 months of completion, and remains fully leased.

However, cities that lack a large number of corporate headquarters may not find that high-end buildings have an advantage. Phoenix, for example, hosts mostly service providers: back offices, call centers, and some service professions such as accounting, law, and government. The demand for Class A buildings is significantly less, and what defines the building is very different.

The turnkey approach. At the smaller end of the market—projects under 20,000 square feet—property owners are offering leases with a turnkey approach to tenant improvements. In San Francisco, landlords who once provided tenants an improvement allowance per square foot of their space are now completing a space plan and pricing exercise before the lease is signed. Those figures are incorporated into the deal with the tenant. The tenant must have expressed strong interest in the space before the architect, landlord, and potential tenant go into such a pricing exercise.

The important difference in this approach is that the landlord is assuming the risk. If the project costs more than the budget, the landlord pays. The tenant has no exposure in terms of construction costs or architectural fees, and gets a more customized space. This is helping deals happen at the small end of the market, which may encourage entrepreneurial companies to stay in San Francisco.

Furniture Industry Trends

Most large furniture manufacturers are trying to minimize workstation costs, which are decreasing as these manufacturers compete for scarcer customers. An article in the Silicon Valley/San Jose Business Journal in January 2003 cited current workstation costs as ranging from \$3,500 to \$6,000 per workstation, but owners' budgets ranging from \$1,800 to \$2,500. The trend is toward reducing workstation options, rather than reducing the size of the workstation—employees work more efficiently when they can spread out work and keep needed supplies within easy reach.

Despite the lowered workstation budgets, ergonomic improvements are not going away. The 2002 Liberty Mutual Workplace Safety Index named repetitive motion as the sixth leading cause of workplace injuries. But litigation and the costs of absenteeism are not the only concerns. The American Society of Interior Designers's 1997 publication *Productive Solutions* cites numerous studies—by the U.S. Army Corps of Engineers, the National Institute for Occupational Safety and Health (NIOSH), and Miami University's Center for Ergonomic Research in Oxford, Ohio, among others—that have demonstrated that ergonomically adjustable environments improve productivity. NIOSH found employee performance increased 23 percent when ergonomic office equipment was used. While ergonomic chairs and keyboards are familiar, height-adjustable work surfaces are likely to become more prevalent, allowing workers to adjust their posture for different kinds of work.

While some trends are national, most are regional. Office vacancy rates in Washington, D.C., are half that of San Francisco. One large company relocated to the Southwest to lower its labor costs, only to find it had to readjust these costs when a competing company came in and offered employees daycare and other amenities. The continually sluggish national economy only sharpens the struggle in all regions to keep down costs, attract and retain the best employees, and use real estate efficiently and wisely. Innovations in real estate strategies, office planning, and furniture design continue to emerge from the economic challenges, and in some cases, as a result of them.

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Environmentally Friendly Building

According to Rafael Pelli, the building industry's growing appreciation for environmentally friendly architecture is a natural byproduct of the times. "Those of us who were teenagers in the 1960s—and later—grew up with an awareness of the limits of our environment to absorb all the things that were happening," notes Pelli, from the New York office of Cesar Pelli & Associates, the firm his father founded in 1977 in New Haven, Connecticut.

"That consciousness of basic environmental considerations has definitely penetrated to a large degree, even among conservative developers," he says. "I still think, though, that we're in the infancy of it, [so we don't know] whether the change is really a profound one or a superficial one."

Pelli has seen the most dramatic change in certain contained communities—universities and small municipalities, for example—that have drafted codes to govern the construction of all new buildings. Though relatively small and spread out, those incremental efforts could have great results, he maintains.

"Those things over time—when you start talking about not one or two buildings, but ten or 20 buildings—will start making a difference in all sorts of ways," says Pelli.

And even in the general building community, the anticipation of wider-reaching, green-minded policy has many developers paying closer attention to environmental considerations.

"I think a lot of developers are starting to see some of these issues as criteria that inevitably will be adopted," suggests Pelli. "They want to be in front of it, because they might be building for a year from now—or three years from now. They're worried about the value of the investment over a longer period of time."

Of course, that future value is of little concern to a developer who is thinking of a project only as a short-term investment. In those situations, he points out, "it's harder to create the economic argument for environmental issues to the developer himself, because he's not interested in, for example, a ten-year payback for energy He's not taking the risk on that longer investment."

Even though the future of environmentally conscious design is vague, Pelli sees a different kind of value just in continuing to pursue it. If the idea of architecture having a positive environmental impact is exciting, then just as exciting is the notion that environmental strategies can influence the direction of architecture.

"There is not yet a style of architecture that you would call the style that emerged out of environmental design," says Pelli. "It's too early to tell what buildings will look like that are generated by these ideas. For those of us who are interested in both design and the environmental strategies, I think that's what drives us. We want to see where it's going to go. You don't know exactly how environmental strategies are going to influence buildings, but you know that they will and that they should."

In the meantime, adds Pelli, the building community can and should pursue the right kind of projects. "If you look at the energy performance of one building versus another, what's deceptive is that you can have a zero-energy-use building, but if you need 100 people to get into their cars and drive 100 miles every time to get there, then the energy consequence is much greater than if you have a relatively dumpy building that sits next to a subway stop," he notes.

"The environmental consequence of having those 100 cars drive both ways, every day, is actually much greater than the environmental impact of the building itself."—**William Brantley**, a freelance writer living in western Massachusetts

FEATURE BOX

Design Follows the Numbers

One of the most significant trends in interior design for corporate offices has been increased requests for quantifiable information from clients before they make a move. For years, manufacturers and designers claimed that furniture, lighting, or space planning improved efficiency and productivity. Quite often, the statistics were in short supply.

Now, systems exist for assessing issues such as corporate organization, functional adjacencies, furniture systems, and whether a proposed scenario can cost the client more, or less, at the outset

and on an ongoing basis—in terms of productivity and dollars. The key is for companies to monitor the costs of moves and changes over time, so that they can make more informed decisions before and after designers have created the space.

Monitoring tools include benchmarking studies, workplace performance metrics, organizational analysis, programming assessment (based on growth or shrinkage projections), migration planning, and alternative work solutions. Such studies often are made in concert with creating a design for new offices. However, in other cases, designers are called in solely for strategic projects planning such as change management planning, i.e., how change in the work process will affect different departments; performance measurement (those aspects of design that significantly affect performance), and postoccupancy assessments. In the future, architects and designers who work on office spaces will need to be able to tell their clients how design decisions affect the bottom line—with real statistics linking design, expenditures, and productivity.

Demand for thorough analysis of costs and statistical information particularly has arisen in the areas of financial services and technology/communications firms. Each firm has different concerns initially, and each is evolving differently according to the statistics it is receiving.

A bank builds a tower. A large national financial institution sought strategic planning for a new office tower it was building on the West Coast. Analysis of the architect's plan for the tower's shell led to slight design modifications resulting in dramatic increases

in occupancy. The analysis incorporated the bank's furniture standards as well as potential exit strategies should they ever lease the space. The column spacing on the perimeter changed from 30 feet to 20 feet. Although this required increasing the number of columns, each column could contain less steel. In the end, this bought flexibility with an additional three feet of overall width per floor. As a result, furniture systems and related files could be placed at the exterior face of the building envelope. This approach also makes it possible to accommodate larger workstations for supervisors anywhere on a typical floor.

The number of penetrations into the building's core was reduced. With a single user, the precise preferences for locations of restrooms, toilets, freight elevators, and electrical rooms can be determined in advance. By locating these uses out of the way and grouping them together, it is possible to place private offices or a conference room along the core, thereby reducing the circulation area's square footage. Should the floor be leased to multitenants or be subleased in the future, this layout provides the flexibility to accommodate the changes.

The greatest savings were realized when the team recommended offsetting the core from the center of the building. With the core moved only four and one-half feet, the bank was able to provide another row of workstations without increasing the floor area. This small change made it possible to add 20 workstations to each office floor.

While the difference on each floor may not seem significant, these strategies resulted in a net increase in the building of more than 600 occupants, from 3,900 to 4,500. Even at a modest lease rate of \$24 a square foot, the addition of 600 occupants with no increase in occupied space can result in a savings of over \$14 million over a five-year period.

People's Choice Home Loan Inc. People's Choice Home Loan, an Orange County-based residential mortgage wholesaler, needed to program its new corporate headquarters. The project involved a proprietary relational database and a process called performance programming to develop workplace standards and real estate requirements.

The process gathered both quantitative information, such as head counts, and qualitative information, such as descriptions of how employees worked in a typical week and how they used meeting areas and support spaces. Opportunities for increased efficiency were identified by evaluating workstations and office standards, as well as operational efficiencies and organizational structure.

Numerous configurations were analyzed against the existing building's nominal floor plate configuration to determine the optimum workstation standard for a given location. Similarly, the assessment of departmental relationships ascertained if any departments could be located off site or if any current off-site functions would perform better back within the headquarters facility.

The resulting square footage requirements were delivered to the client within five days of the initial interviews. To speed the process, multiple programming teams worked simultaneously, recombining the database at the end of each day's interviews. This allowed the client's real estate team to present its lease negotiating position quickly, streamlining the negotiation.

A programming process that might have taken several weeks to resolve using a traditional linear

approach was instead resolved in five business days, resulting in significant savings in time and money to the client. Further, the recommendations allowed the client to lease considerably less space than originally anticipated, which led to an overall real estate savings of 30 percent.

California Public Employees' Retirement Service. The California Public Employees' Retirement Service (CalPERS), one of the largest in the country, needed a strategic growth plan to program and design its new headquarters building expansion of 550,000-square-foot and to restack its existing headquarters building of approximately 500,000 square feet. The strategic goal of the project was to help CalPERS determine the size of the new structure and which existing divisions it would house.

The process involved interviewing employees in all divisions in order to understand how they work, whom they work with closely, and where additional functions within the existing building could be improved to increase their productivity.

A study of the functions of all departments identified three core competencies: public interface/customer service, operations (supporting the organization internally), and corporate strategy. By defining several business drivers, adjacency scenarios could be developed describing who should move into the new building and why. Groups with more intensive needs for technology might benefit from moving to a new building with enhanced infrastructure. Groups experiencing dynamic growth or groups with a potential for significant population changes might benefit from moving so that their growth could be planned for in a more strategic fashion. Groups that would be expensive to move might be better off staying put. Groups that occupied a high percentage of open office (low-wall) spaces would be less expensive to move. The eventual solution was to distribute the three core competencies evenly between the two buildings, with a hybrid of business drivers providing the rationale for which groups went where. As a result, old and new buildings have equal stature: no department would feel kicked out or left behind. This distribution also has allowed the customer service groups, which interact with the public, to be accessible. The groups that interact with the public the least have private zones on higher floors. The arrangement reflects each department's detailed work needs and flow.

Special amenities give each building its own identity, such as the well-used cafeteria that remained in the existing building and a fitness center added to the new building. This achieved the goal of creating a complex of headquarters building rather than separate buildings housing different entities. Locating major amenities in each building gives people a reason to go back and forth between the two buildings, creating a feeling of one campus as opposed to two buildings. What was achieved is a complex of two buildings on a four square blocks with 1,400-car parking capacity below grade. The complex will also feature a large open space for the 3,500 employees.

Toyota Motor Sales, Information Systems.

In early 1999, Toyota's Information Services (IS) Group was searching for a better way to manage the dynamic change faced by its project teams. The process involved assessing the amount of space the IS Group would require in the long term, and identifying 210,000 square feet of leased space that would allow the IS department to "right-size" its staff, who currently were working in lunch rooms and basement areas, at library carrels and folding tables—rather than in standard workplaces. The IS Group's needs tied into the master plan for the 3 million-square-foot Toyota campus. The master plan aimed to reduce the ratio of leased buildings to owned buildings, and to create an overall strategy aligned with the company's functional business needs.

Initial tasks included developing an accurate count of the consultants in the IS Group and identifying where they were located (some were with other Toyota business units because they worked with them, others only because those units had available space). The next task was to devise a plan to move the IS Group to standard work spaces for both the short term and the long term, in accordance with the master plan.

Short-, mid-, and long-term migration planning was developed in steps to help Toyota realign the campus. In the short term, some of the group's departments would have to move off campus for five years while new buildings were constructed and departments restacked. For the long term, the IS Group would need buildings that could accommodate the ever-changing number of staff.

The next step was to perform a thorough assessment of the IS Group's work process by interviewing each team. The group continually experienced dynamic change, working on dozens of projects at any given time, each project taking from several months to a year. The teams assigned to each project grew and shrank in size depending on the phase of the project, and staff members were reassigned as projects were completed.

Workstation modules were created within Toyota's existing standard footprint, but with more flexible and mobile components that encouraged the ad hoc meetings the staff was accustomed to. Instead of spending time going to a separate space to review work together, staff members gather

at their monitors, discuss the project, and then break away. This also frees up the conference rooms for more formally scheduled meetings. Since ad hoc meetings occur frequently throughout the day—eliminating the time that would be spent on getting to a meeting room, setting up, breaking down, and returning to desks—they can save up to 20 percent of a staff member's time.

An analysis of the statistical information gathered during the interviews led to a recommendation to establish function-based workplace standards. These standards organize workspaces according to the staff member's type of work rather than his or her title. For example, a more flexible workstation was recommended to give staff the ability to meet around a monitor easily. In addition to giving the staff the ability to work together at their cubicles, a number of informal meeting areas were provided. A financial analyst may require maximum storage within the cubicle, while a marketing analyst may require a guest chair in lieu of storage, for meeting and reviewing work. Human resources analysts are assigned small offices, because of the confidentiality of their work.

Sacramento Municipal Utility District, Sacramento, California. In 2002, the Sacramento Municipal Utility District (SMUD) sought to maximize efficiency and develop workplace standards for approximately 500,000 square feet of office and support space housed in 14 different facilities. As city utility services expanded, SMUD needed either to find more space or to become more efficient in the way its employees occupied and used existing space.

Programming and strategic master planning, which included a best practices study, helped SMUD determine what aspects of its process could be improved. The study assessed the layout of work spaces, benchmarked the results with other utility metrics, and evaluated conference/meeting needs and travel. It found that SMUD had 64 variations of one cubicle size alone. Support space was underused, too big, or not shared, leaving conference rooms unoccupied for significant periods of time.

The District's goal was to develop a functional, cost-effective, and flexible work space without adding new space, new buildings, or new leases. The program included a technology assessment of work style capabilities, as well as a code and cost analysis of building upgrades and potential renovations. Consultants studied the available technology, the degree to which SMUD used it, and its capacity to meet future needs. They also addressed buildings that had code issues and determined the cost of upgrading those buildings facilities.

Because of the study, SMUD's facility department was able to gain executive consensus on the adoption of new streamlined standards. These standards reduced the cubicle variations from more than 64 to two. Most typical workstations shrank from 81 square feet to 64 square feet. The study also illustrated how haphazard changes had resulted in wasted space and confused pathways. By streamlining standards and planning modules, the department could reclaim unused space, shrink inventory costs, and reduce the time spent customizing workstations for its workforce. The District originally had a churn rate of 30 to 40 percent each year, with each churn event costing about \$4,000. Streamlined planning and cubicles allowed more box moves without dismantling panels and rerouting cabling and wiring. SMUD anticipated being able to respond to additions, moves, and changes through simple box moves, which would result in an estimated annual savings to the District of more than \$1 million. The completed program will be updated annually to ensure that the District's adds, moves, and changes remain within the context of the strategic master plan.

A large software company. The real estate and facilities department of a large software company was managing more than 200 campus alteration projects each year. In 2000, containing costs for campus projects became a primary initiative. In fiscal year 2001, an on-site tactical team and a separate strategic team took on two tasks: to reengineer the delivery process using both a Web-based project management tool and a new Web-based project request and approval system; and to provide business improvement strategies for the overall delivery of projects.

The teams first conducted a thorough assessment of the existing delivery process, including the seven key components of effective project delivery: project initiation and approval processes, cost management practices, project performance, planning methods, standards of practice and design, communication effectiveness, and resource management. This assessment involved interviewing key real estate and facilities managers and vendors; evaluating project files, facility standards, and practices; and thoroughly reviewing cost accounting records and types of projects to establish a history of project delivery methods and cost baselines. Each component was then graded as a best practice, a strength, or a weakness, and the resulting assessment report became the foundation for developing the key process improvement initiatives.

A "metric scorecard" measured the results in terms of dollars saved, and provided metrics in finance, process improvement, activity (the volume of project requests and responses to those requests), and quality (general satisfaction with both communication and project management, based on employee surveys. The scorecard was updated quarterly.

The initiatives accelerated the project approval process and project delivery. After a year, the department exceeded its goal of a 10 percent reduction in project costs. The client was able to

move over smoothly to the new delivery model with no down time or disruption of operations.

Compared with fiscal year 2000, design fees were reduced 51 percent, construction administration fees were reduced 29 percent, general contractor overhead costs were reduced 47 percent, and general contractor fees were reduced 18 percent. Scope reduction and value engineering saved more than \$900,000 in construction costs.

The case studies outlined above highlight a new direction in interior architecture. Clients are asking for strategic planning to take place before design begins. They realize that by analyzing space usage, workstation configurations, office sizes, department relationships, and work processes, they literally can save millions of dollars. Small changes can add up to large improvements in the efficient use of space. Standardized office sizes and streamlined facility requirements can lower real estate costs. Strategic planning can result in improved work flow and lead to greater productivity. By understanding the clients' work process and departmental adjacencies, the strategic facilities plan gives a company the flexibility to respond to dramatic changes in project team sizes and configurations. Enough best practice studies, benchmarking studies, and workplace performance metrics now exist to provide a general framework for project-specific strategic planning.—**Brian M. Koshley**, managing principal, Orange County office of IA Interior Architects; Mary Lee Duff, an associate in the San Francisco office

FEATURE BOX

Companies Give Back

BP North America Inc.'s Cooper River plant, just outside of Charleston, South Carolina, takes up about 450 of the property's 6,000 acres; the rest is wetlands, forest land, and fields managed for timber and biodiversity. Back in 1989, Hurricane Hugo destroyed nearly all of the property's woods and much of the adjacent Francis Marion National Forest. In the storm's wake, BP management and site specialist Ernie Nelson took a close look at the property's natural resources and worked out how to restore them. A few years later, wildlife, timber, and environmental education programs began at the BP property, with Nelson at the helm.

While managing the property's forests—selectively cutting trees, maintaining fire breaks, and conducting carefully controlled burns—Nelson and his coworkers found that the property attracted an endangered species—the red-cockaded woodpecker. Now, the site is included in a Safe Harbor program under which BP and state and federal wildlife agencies work together to protect endangered red-cockaded woodpeckers on up to 1,000 acres. Fire and timber harvests keep acreage clear of invading deciduous trees, maintaining open pine forest habitat visited by the cardinal-sized, zebra-striped birds. The Safe Harbor program's hallmark is its built-in flexibility. For example, if rare woodpeckers set up house at Cooper River and BP decides to build at the site, the birds may be relocated. "That kind of flexibility wouldn't be there if we were not enrolled in a program such as this," says Nelson.

BP and a number of other companies such as the Ford Motor Company now make it their business to conserve wildlife on their properties. Whether a company embraces the environment because it is supporting its mission statement or because it is public relations driven, the results of recent corporate actions to save biodiversity are considerable—and growing. For security, aesthetic, or investment reasons, large companies often maintain large-acreage buffers around their facilities—areas conservationists see as potential wildlife havens that are also rich in community outreach possibilities. The Cooper River facility, for example, is one of 40 BP properties protecting habitat and running environmental education programs.

To date, few companies have dedicated conservation acreage as large as that at BP's Cooper River, yet the spectrum of companies now involved in supporting the wildlife act include waste management, pharmaceutical, mining, metal, and utility firms in a range of locations from downtown Detroit to rural northern Spain and Vietnam.

One organization working to fuel growth in corporate conservation programs is the Silver Spring, Maryland-based Wildlife Habitat Council (WHC), which was founded in 1988 by a team of companies —Anheuser-Busch Companies, Inc., DuPont Company, ExxonMobil, General Electric Company, Tenneco Oil Co., and U.S. Steel Corporation—and environmental groups—the American Farmland Trust, Izaak Walton League, National Wildlife Federation, and World Wildlife Fund—U.S.

A nonlobbying, nonprofit organization, WHC is involved in enhancing and restoring wildlife habitat, especially on corporate real estate. WHC and corporate partnerships now work together to protect habitat on more than 2 million acres at 800 sites around the world. In all, 119 companies in 48 states, Puerto Rico, and 16 other countries participate, and the number is growing.

WHC, along with interested companies, restore wetland, grassland, and woodland habitats; increase property biodiversity; and conduct on-site community outreach and environmental education programs. Increasingly, they also set their sights on creating appealing wildlife habitats on abandoned industrial sites, or brownfields.

Many companies seek WHC certification, a process that formalizes their commitment to conservation and environmental education programs and requires re-inspection every two to three years. About half of WHC's 27-person workforce consists of biologists who are paid by partner companies to do research at their facilities, to initiate programs, and to conduct certification inspections. WHC issues annual awards to companies that excel in conserving land when they develop properties or in educating the public about environmental issues.

These endeavors can benefit more than wildlife: A 1995 Duke University survey of 164 site managers in charge of corporate wildlife habitat and environmental education programs found that 95 percent of those responding believed that the programs boosted overall employee morale. Workers, including many who do not volunteer time, report that they enjoy spotting and learning about wildlife at their workplace. Sixty percent of site managers believed that the on-site habitat enhancement programs foster better relations between the company and communities nearby.

The Cooper River Plant partners with 13 schools, two colleges and universities, five regional agencies, and eight community organizations on nature-related programs held on the property. About 1,000 students—most of them on school outings—use the site as a living laboratory. Some graduate students study the property's diverse flora and fauna, which includes bobcats, beavers, many reptiles, amphibians, butterflies, fish, and hundreds of birds, including bluebirds, purple martins, and wood ducks attracted to nesting boxes. The property also is used for guided walks for school groups and by employees for varied outdoor pursuits, including biking, camping, firewood gathering, birdwatching, fishing, and hunting.

Environmental organizations are starting to take a more active interest in companies that embrace conservation principles. "Organizations had previously viewed industries differently. It was difficult for companies to engage environmental groups," says WHC's executive vice president Robert Johnson. While some groups and companies remain at odds over development, pollution, or other environmental issues, others increasingly are cooperating with one another, as economic development and environmental responsibility are perceived more and more as compatible goals.

Government agencies also approach WHC and its companies. "Environmental agencies are becoming more involved with us at the federal, state, and local levels," says Johnson. "They know that we have established relationships with companies, which can help them to encourage biodiversity protection, pollution control, and site restoration." For example, with the urging of the U.S. Environmental Protection Agency (EPA), WHC is becoming more involved with companies in restoring brownfields. "We're trying to work with companies on how and when to incorporate ecological values in restoration efforts," points out Johnson.

In Michigan, the Ford Motor Company currently is working with the University of Michigan—Dearborn, Michigan State University, WHC, and contractors to restore its 1920s-era Rouge River automotive manufacturing plant, which is located on a brownfield site. The \$2 billion overhaul includes cleaning up a former steel production site that was contaminated by coke oven waste. With EPA permission, Ford is experimenting with phytoremediation—using plants to remove contaminants. "Our phytoremediation uses plants strictly native to Michigan," says Ford land environmental control engineer Dan Ballnik. In September 2002, a 1.6-acre plot was planted with native vegetation such as New England aster, cardinal flower, and big bluestem grass, which reduce hydrocarbon contaminants in the soil but do not absorb them and pass them on to local wildlife. University students will help test soil, water, and plant samples. If the plot works, Ford plans to expand the project to clean up several more acres at the site.

A new assembly building's ten-acre vegetated rooftop is designed to absorb factory noise, sunlight, and rain while attracting butterflies and bees. The rooftop, like the site's parking lots and other parts of the property, will connect to a system of low swales thick with prairie cordgrass, swamp goldenrod, joe-pye weed, and other native plants. As rainwater trickles through the swales, contaminants will filter out slowly before the water reaches the river.

Ford also runs a series of environmental education, stream bank stabilization, school yard habitat, and other programs at local parks and schools in the Rouge River watershed, and at its nearby headquarters and research properties. The company works with WHC to improve habitats on its properties in Brazil, Canada, China, Germany, Ireland, Malaysia, Mexico, the Philippines, the United Kingdom, Venezuela, and Vietnam.

Other similar partnerships recently have formed between companies and institutions bent on saving wildlife and providing environmental education. For example, from 1997 to 2002, the Saturn Corporation worked with University of Tennessee—Knoxville (UT) scientists to improve the landscape on parts of its 2,400-acre site in Spring Hill, Tennessee. Working with the contracted

grounds maintenance crew and Saturn employees, including some volunteers, UT ecologists and Saturn's grounds maintenance team planted more than 1,900 trees, 3,700 seedlings, and more than 4,000 nuts and seeds of native plant species at several plant entrances and other sites on the property that now attract wildlife, save on watering and fertilizing, and help fight an influx of introduced, or exotic, weeds.

The UT and Saturn team also converted 50 acres of high-maintenance turf—that, in season, had to be mowed once every two weeks—to wildlife-rich meadows that required only a twice-yearly cutting. The team worked with a Saturn farmer to widen a streamside buffer zone and habitat corridors between fields—efforts that reduce erosion, filter farm field runoff, and attract local wildlife. It stopped the mowing of the property's most biologically diverse 80 acres, which was set aside as a wildlife sanctuary. While this project was dropped at the end of last year, after a downturn in car production, Saturn still maintains many of the setaside and planted areas.

At this point, a small percentage—up to 8 percent —of Earth is designated as conservation land of one type or another, administered by local or provincial governments or organizations as national parks, marine reserves, or wildlife sanctuaries. However, much of the world's wildlife—its 4,300 species of mammals, 9,800 species of birds, and millions of other species—lives on the unprotected 90-plus percent, which includes many corporate properties. Corporate conservation efforts increase the acreage set aside for wildlife protection.

For example, the Dow Chemical Company's wildlife habitat team at the 300-acre Dow Wetlands Preserve in Pittsburgh, California, is committed to preserving the tiny salt marsh harvest mouse, an endangered species inhabiting California's dwindling tidal wetlands, where they rely on pickleweed marshes for ample food and cover. The property, a buffer zone for one of the company's chemical manufacturing facilities, is now protected and enhanced by the site's wetlands environmental team. The salt marsh harvest mouse is just one inhabitant of this varied area. More than 120 bird species pass through, including many that stop by during migration periods. On dry ground, the wildlife team buried PVC pipes to create nest sites for ground-nesting burrowing owls, birds that have been losing ground to development, especially in California.

By encouraging—and educating—the public to enjoy corporate wildlife habitats, companies are becoming one of the newest forces in conservation.

By improving and setting aside areas for native wildlife, they also give something back to the land that has provided a foundation for their operations for so long.—**Howard Youth**, a Madrid-based writer who frequently covers conservation issues

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