

FACILITIES

D E S I G N & M A N A G E M E N T

Green Green Grass of Work

A little bit of green can go a long way, and we're not talking about money. Plants in the workplace have been proven to improve employee productivity and reduce stress.

Live interior plants, as Martha Stewart might say, are a good thing. The mere presence of live greenery enhances the workplace aesthetically, thus leading to a more pleasant environment for employees. Plants have also been shown to increase productivity by creating a less stressful environment, which in turn leads to a more satisfied and productive workforce. In the current unsteady economic environment, employee productivity is more important than ever to a company's bottom line. FMs and executives alike may want to seriously consider the value of living things helping other living things.

Office anxiety levels are high as our current economy and security uncertainties place added stress on American workers. According to research conducted by Integra Realty Resources, New York, and Opinion Research Corp. International of Princeton, New Jersey, 23 percent of today's workforce has been driven to tears as a result of workplace anxiety, with 10 percent working in an atmosphere where physical violence has occurred. 29 percent of workers have actually raised their voice at co-workers. One of eight workers (12 percent) has called in sick because of workplace stress, and one of five American workers (19 percent) has left a company in the past year because of stress.

According to Wayne Hansen, a member of Cal-OSHA and an editor for Joint Commission of American Hospitals Organization (JCAHO) publications, human assets are the most valuable and expensive assets of any business. In terms of cost per square foot, the human asset is approximately 10 times the total building operating cost and nearly 100 times the



It would be hard to imagine this open lobby area without the abundance of live greenery. Live plants not only contribute to the space's aesthetic appeal, but to the physical well-being of the occupants as well.

energy cost. No matter how it is expressed, when a business can give rise to personal productivity, the business wins.

Down with stress, up with productivity

Research conducted by Dr. Roger S. Ulrich of Texas A&M University, Helen Russell, Surrey University, England, and studies conducted by Dr. Virginia Lohr of

Washington State University indicate that plants significantly lower workplace stress and enhance productivity.

In Lohr's study participants were 12 percent more productive and less stressed than those who worked in an environment with no plants. The study took place in a simulated office setting. Common interior plants were used in a computer laboratory with 27 computer workstations. A computer program to test productivity and induce stress was specifically designed for these experiments which incorporated 100 symbols and time-measured readings of participants' reactions. They were presented in the same randomized sequence to each subject. Blood pressure readings recorded while using the program confirmed inducing stress.

Emotional states and pulses were also measured during the experiment. The presence and absence of plants were the only variables that participants experienced. When present, the plants were positioned so a cluster would be in the peripheral view of each subject sitting at a computer terminal, but would not interfere with the subject's activity. In addition to demonstrating significant increases in post-task attentiveness, subject reaction time in the presence of plants was 12 percent faster than those subjects without plants.

The results indicating an influence of plants on blood pressure are consistent with research conducted by Ulrich. Visual exposure to plant settings has produced significant recovery from stress within five minutes.

As many performance-based incentives to enhance employee productivity also give rise to stress, the ability of increasing productivity *while* lowering stress is

extremely valuable. Progressive human resource executives are finding they cannot afford to ignore such an efficient method of human asset management.

Contributing to 'green building' design

The presence of plants is not only beneficial to the workers occupying a space; live greenery actually benefits the space's operational functions as well. Interior landscaping keeps humidity levels at optimal range for human comfort, health and facility maintenance. The cooling effect of indoor trees and landscapes has been carefully measured and well documented. The mere process of outsourcing interior landscaping services is saving many facilities time, staff and equipment costs.



These live plants provide an engaging backdrop in this corporate lobby, and the maintenance is cheaper than using artificial plants.

Plants cool by a process called transpiration, which, according to the U.S. Department of Agriculture, decreases air temperature in offices by 10 degrees. A recent Washington State University study demonstrates that plant transpiration in an office environment releases moisture, creating a humidity level exactly matching the recommended human comfort range of 30 - 60 percent. Similarly, the same study concludes that without plants, the relative humidity in offices runs below this recommended range. When the relative humidity of office air is too low, certain materials such as wood become damaged and crack. When the relative humidity is too high,

the condensation on windows and exterior walls can result in costly structural damage.

According to the International Society of Arboriculture, the net cooling effect of one young, healthy tree is equivalent to 10 room-size air conditioners operating 20 hours a day. According to literature from the Associated Landscape Contractors of America, proper selection and placement of plant materials can lower heating and cooling costs by as much as 20%. These statistics are an important tool for environmentally efficient corporate designers and facility managers. U.S. Energy Systems Inc., White Plains, New York, a growing energy company, endorses the use of indoor plants. "We practice what we preach and find that our investment in interior plant services has had the expected outcome of improving indoor air quality, supporting a positive outlook in the workplace and increasing employee productivity," says Susan Odiseos, vice president, corporate communications. "Interior plants are a solid return on investment and a MUST for any corporation concerned with sustainable, 'green building' solutions."

63 percent of those surveyed in *Facilities'* outsourcing survey last winter (see December 2001, p. 13) reported they outsource landscaping/groundskeeping duties. Outsourcing interior landscaping contracts affords key staff and management to focus on tasks specific to company goals. According to Karen Parks, contract manager, Aetna Business Resources, Hartford, Connecticut, the need to outsource interior plant services became obvious. Her in-house grounds staff salaries, equipment and material costs were increasing yearly and she found her crews struggling to meet the growing demands of the property and OSHA regulations. Many in-house staffs are spread so thin that they become unable to apply professional standards to the property while appearance as well as property values begin to suffer.

The Associated Landscape Contractors of America reports that certification for the interior landscaping industry has become even more competitive, requiring these

professionals to be equipped with advanced aesthetic and environmental technologies. This professional premium is readily apparent and can be measured in visual and bottom-line advantages to the property. Richard Greninger, managing director of CarrAmerica Realty Corporation, Washington, DC (with 326 buildings in 15 markets) claims that through outsourcing these services, "live landscapes have become a value-added distinguisher, defining our first class brand identity."

Real versus fake

Although aesthetics inspired Tom Rubidoux of the MGM Grand Hotel, Las Vegas, to switch from artificial indoor plants to live landscaping throughout public areas, he was delighted with the bonus of saving money. Not only were silk plants more expensive than live plants, the MGM now saves a substantial amount on maintenance. Live plants can be tended in place and minor damage is repaired by growing new leaves. In the right light live plants flourish while silk plants can bleach out. The dusting process for silk requires taking them outside, washing them, drying, and treating with fire retardant. By the time they are cleaned twice, they have to be discarded.

Attracting and retaining employees

The *Human Resource Executive* (April, 2001) published results of a study from Headhunter.net indicating that 78 percent of today's best and brightest employees would leave their current job for a "better offer" while 48 percent are actively pursuing other opportunities. Statistics from Unifi Network, Westport, Connecticut, indicate that salary alone is no longer the determining factor in what constitutes this "better offer."

Surveys conducted by Unifi Network report many factors that assist in managing this morale curve. The data indicates that in order to attract and retain top employees, the workplace must include aspects of what inspires employees during "off" time. Since Gallup polls indicate that two-thirds of the American workforce cite gardening as a favorite hobby, it's not surprising that humanizing the workplace with plants is a highly effective method in promoting

employee satisfaction. Copious studies verify the positive effect plants have on employee disposition. Marketing research (Krome Communications, 2000) confirms that employee attitude and retention are top incentives for corporations to continue interior landscape contracts.

Aesthetic value

As reflected in *The 2001 BOMA/CEL Tenant Satisfaction A-List Award*, “appearance and condition of the property” is a top category of evaluation among tenants. Similarly, studies out of



The World Financial Center's recently reopened Winter Garden has 16 Washingtonia palm trees. Once in the shadow of the World Trade Center, the Winter Garden now thrives as an oasis in Lower Manhattan.

England's Oxford Brookes University reinforce that while indoor plants continue to cost less than most alternative corporate décor choices, they offer a guarantee of positively enhancing perception and contributing to well being. The same studies find that people (clients or employees) perceive a building with interior planting as more expensive-looking, more welcoming and more relaxed. Conversely, the studies prove that perceptions of a building are less positive in the absence of plants. Melissa Coley, vice president, Brookfield Financial Properties, New York, is a corporate

interior plant enthusiast. She asserts that the vast landscapes throughout Brookfield's property “provide a critical elegance to a bustling business setting of 40,000 employees.”

Sick Building Syndrome

Many facilities can't afford to maintain a system to control humidity and/or are forced to operate contaminated systems, which emit disease-causing microorganisms. The result is a notable increase in employee illness (generally eye, lung and upper respiratory problems as well as allergies, colds and viruses). Also, employee health and productivity are at risk due to common but dangerous office toxins found in fibers (carpet, fabric, wall coverings) and solvents (wallboard, paints, varnishes, furniture). Specifically, formaldehyde is found in office foam insulation, plywood, particleboard in desks and bookshelves, carpeting, paper goods and janitorial supplies. Benzene is in offices rich with synthetic fibers, inks, plastics and tobacco smoke. Trichloroethylene comes from adhesives, inks, paints, lacquers and varnishes used in office buildings.

“Sick Building Syndrome” develops into a serious and expensive liability when these toxins become concentrated inside sealed office buildings. NASA reports the syndrome is widespread in sealed, energy-efficient buildings that have less exchange of fresh outdoor air for stale indoor air. This causes higher concentrations of toxic chemicals in indoor environments, brought about by emissions from a great variety of building constituents. As energy-efficient construction becomes absolutely essential, ‘green building’ designers have become concerned about this indoor air quality (IAQ) dilemma. One of the most troubling reports comes from research published by Bio-Safe Inc., New Braunfels, Texas, whose data confirms that energy-efficient, sealed office structures are often 10 times more polluted than the air outside.

According to several studies done by JCAHO, IAQ-related absenteeism has been on an alarming upswing. In recent studies, 40 percent of absenteeism was attributed to IAQ-related illnesses. Similarly, the same report demonstrates

an increase of worker compensation claims from 1980 to 1994 for IAQ-related issues. The number of such cases rose by almost 5,000 claims within that period and has continued to rise over the last five years. Moreover, many of the more recent cases have resulted in litigation. The average cost of one of these claims is \$27,850 (which includes a \$4,750 insurance premium increase, \$2,100 in human research costs, and \$21,000 in medical treatment costs). What these figures do not account for is the cost to business for absenteeism of these individuals. If the absent worker happens to be in a supervisory or managerial position, there is a cascade effect on productivity losses from the staff they supervise.

Research shows that plant-filled rooms contain 50 - 60 percent fewer airborne molds and bacteria than rooms without plants. For almost 20 years, Dr. Billy C. Wolverton and his aides in the Environmental Research Laboratory of John C. Stennis Space Center, Stennis Space Center, Mississippi, have been conducting research using natural biological processes for air purification. “We've found that plants can suck these chemicals out of the air,” he says. “After some study, we've unraveled the mystery of how plants can act as the lungs and kidneys of these buildings.” The plants absorb office pollutants into their leaves and transmit the toxins to their roots, where they are transformed into a source of food for the plant.

Wolverton has found that plants are especially needed in office buildings where Sick Building Syndrome is common. He goes so far as to suggest that everyone have a plant on his or her desk, within what he calls the “personal breathing zone.” This is an area of six to eight cubic feet where you spend most of your working day. Jon Naar, author of *Design for A Livable Planet - How You Can Help Clean Up the Environment* (Harper & Row, 1990), suggests 15 to 20 plants are enough to clean the air in a 1,500-square-foot area.

Strategically placed, plants help to soften the din in a typical office. A small indoor hedge placed around a workspace will

reduce noise by 5 decibels. The contribution of interior plants to sound absorption has been well documented in numerous studies, including work done by Drs. Russell and Uzzell. According to the Associated Landscape Contractors of America, landscape professionals are replacing cubicles for “tree walls” and



Trees add a striking and serene interior accent to a building's open spaces.

other innovative plant groupings to reduce the costly “decibel distraction factor.”

Plants improve all our lives, in our workplace as well as our residences. They beautify our surroundings, enhance our performance at work and help fight the IAQ battle. All of these factors, in addition to the overall cost savings achieved by buying real plants instead of artificial, should easily convince FMs of the benefits achieved from plants in the office.

Mary Jane Gilhooley, director of development and public relations, Focal Point Communications, Los Angeles, serves as the media relations director for the national information campaign, Plants at Work (www.plantsatwork.org) in an effort to educate the public about the important benefits of interior landscaping.