



# OFF THE SHELF

EPA REGIONAL HEADQUARTERS  
KANSAS CITY, KANSAS

Presented by the **Green Team**

# ABOUT THIS ISSUE

## PROJECT TEAM

ENVIRONMENTAL PROTECTION AGENCY  
GENERAL SERVICES ADMINISTRATION  
KOLL DEVELOPMENT COMPANY  
LANGDON WILSON ARCHITECTS  
KOLL CONSTRUCTION

*This publication was designed to increase the awareness of "building green" and introduce the various environmentally friendly building products that are available.*

For additional information, visit us at our World Wide Web sites:

[www.epa.gov/region07](http://www.epa.gov/region07)  
[www.gsa.gov](http://www.gsa.gov)  
[www.koll.com](http://www.koll.com)



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Glenn Patterson, SkyCam

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## MISSION STATEMENT

We pledge to lead by example and dedicate ourselves to share, distribute and inform others of the environmentally responsible choices incorporated in the design and construction of the EPA Regional Headquarters in Kansas City, Kansas.

We shall accomplish this through partnering, teamwork, shared responsibilities and professionalism to create a "Green Book", that illustrates a quality, cost-effective and sustainable "Off the Shelf" building.

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# INTRODUCTION



Cast in the spirit of partnership, the Green Team was formed in June of 1998 by members of the General Services Administration (GSA), Environmental Protection Agency (EPA), Koll Development Company, Langdon Wilson Architects and Koll Construction. The partnership adopted the name "Green Team" and began development of a program to document their efforts towards the commitment of creating an environmentally sensitive or "green" project. Each member volunteered the time and effort (beyond that of their primary responsibilities to the project) to research, document and evaluate the "green" aspects within the different disciplines of the building. The goal was to evaluate and recommend environmentally responsible products and practices that could be incorporated into the building without significantly impacting the cost or schedule of the project. Standard "off the shelf" building products and systems were utilized incorporating the desired "green" qualities. The term "green" in this sense, refers not only to the application of environmentally friendly building products, but also takes into consideration the manufacturing process of products, installation process, waste management and the maintenance processes

over the life of the building. In many cases, making the "green" choice simply meant utilizing a different means or method of application. This publication, "Off the Shelf", is the product of this Team's endeavor to help educate all who read it. It should be used as a tool to help any venture of industry and government to be responsible in their judgement, selection and attitude towards the development of buildings.

This publication, this building, these individuals may appear to be small and insignificant in the overall scope of worldwide building development, but the responsibility of choices must start with each of us, each day. The lessons learned through this experience will help to raise the bar of awareness and accomplishment for the next group of individuals assigned to the task of developing a project of any type.

What we were able to take from this experience was far more than we put into it. This book is a dedication to the efforts of the Green Team, whose paradigm as professionals has been changed for the better, as a result of this experience. For that, we are truly grateful.

# THE BUILDING



**Responsibility.** It begins when an Owner decides to move forward with a project. A project Owners selection of materials, composites, and construction practices are generally conducted as a function of cost to value. Aesthetics and maintenance/operation impacts are also considerations utilized in evaluating these selections. In an industry whose standard practices are frequently defined by minimum requirements, it is easy to see how responsible choices can and do often take secondary roles in these decisions.

In one of the Design / Construction Team meetings, Mr. Dave Treece, a key member of the EPA construction design Team challenged us to “tell the story” of how, on this project, we took the higher road. By challenging vendors, and ourselves, we “pushed the envelop” of complacency.

Alternate materials, methods, and resources that did not negatively effect cost. These options offered positive and creative environmental solutions to some ordinary, everyday issues. The following narrative tells this story. It’s purpose is to encourage others and show them that an “off the shelf” office building can be purposeful in this endeavor and not become a costly “demonstration.”

Responsibility. Maybe it starts at home with a trash recycling program, or maybe with your children for school or scouts for fund raising, or maybe at work with soda pop cans in a separate container. Regardless of where it begins, responsibilities must become a mantra for our generation to promise to ourselves and to those that will follow us, that we chose to be responsible. Because, after all, the Earth is a pretty nice place to live.

## HISTORY

The challenge was to "win the beauty contest". In so doing, the prize was the opportunity to develop an EPA Regional Headquarters in downtown Kansas City, Kansas.

In late 1995, downtown Kansas City, Kansas had become somewhat physically distressed remnants of a once proud and vibrant metropolitan area. Here, the government saw an opportunity to participate in a revitalization...to lead by example, and create a "jewel" to be seen by the "neighbor across the river" making a statement and becoming the gateway to a new beginning.

In March 1996, development proposals were submitted to the government in response to the Solicitation For Offer (SFO). By mid year of 1996, Koll Development Company had been awarded the project and began moving forward with the design from Langdon Wilson Architects. The following represents the documentary as to "how" this building came to be.

## BUILDING DESIGN / SITING

Situated looking Southeast across the River to spectacular views of downtown Kansas City, Missouri, the building offers a transitional sensitivity from residential neighborhoods to a commercial district while still maintaining a strong "Gateway" impression.



MINNESOTA AVENUE LOOKING EAST c1970  
Provided by Wyandotte County Museum

The building integrated site topography to:

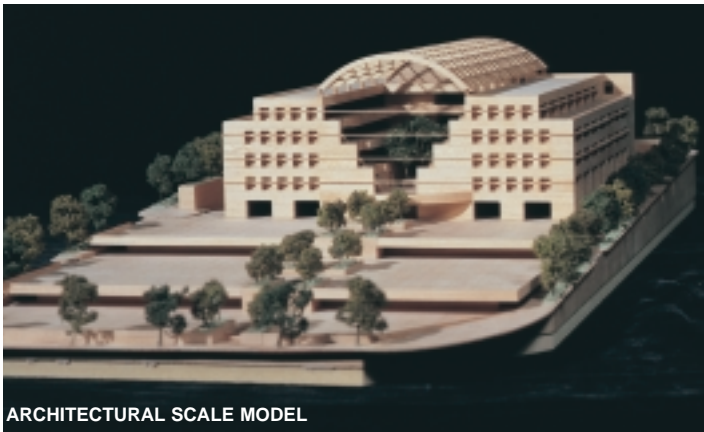
- soften visual impact
- reduce disturbance to site conditions and surroundings
- effective oriented to accommodate natural light and solar efficiencies

The design was intended to emphasize the EPA overall mission of enhancement and sustainability to the environment.

# THE BUILDING

To begin addressing environmental responsibility, the site chosen is a "Brownfield" site. Per definition of the Environmental Protection Agency (EPA), a "Brownfield" site is property that is "...abandoned and/or underutilized and has...an actual or perceived threat of environmental contamination..." The EPA encourages redevelopment of such sites to eliminate the actual or perceived threat of environmental contamination.

Special design considerations were introduced, including indirect lighting, recessed windows for increased shading coefficients, outdoor terraces for employee interaction, a large green atrium with trees, a fountain and a skylight for increased natural lighting. Once the Architect had responded to massing and fenestration design opportunities, he turned his attention to the interiors and building systems.



In addition, you will note where the architectural focus towards a selection of proprietary products and materials that offer "off the shelf" solutions to the "green" intent.

Many federal goals and standards for environmental or "green" programs were originally set forth as law in 1976 under the Resource Conservation and Recovery Act, or RCRA. RCRA controls the generation, treatment, and disposal of hazardous and non-hazardous waste materials. RCRA can be found at Title 40 of the Code of Federal Regulations (CFR), Parts 240-282. The Hazardous and Solid Waste Amendments (HSWA) significantly modified the Act in 1984. Due to problems with over-collection versus demand, Congress added Section 6002 to RCRA, which established the Federal Government's buy-recycled program. Section 6002 also required the EPA to identify and recommend what products made with recycled content should be purchased by federal agencies. The EPA has identified such items in their Comprehensive Procurement Guidelines (CPG).

This "Off the Shelf" publication includes information on how the products used in the construction of this building matched the requirements of the CPG. Note that many products were purchased prior to publication of the CPG.

Please read through our story. Use it, and pass it on. That, after all, is our mission; to pass on what we have learned and created to be used and re-used by others.

## LEED'S™ CRITERIA

The EPA Regional Headquarters located in Kansas City, Kansas used the "Leadership in Energy and Environmental Design" (LEED™) Version 1.0, Green Building rating system as a framework to improve the environmental performance of the Kansas City Region Office Building.

The (LEED™) Green Building rating system is promoted by U.S. Green Building Council. The U.S. Green Building Council says the following about the LEED™ process.

"The LEED Green Building™ Rating System is a priority program of the US Green Building Council. It is a voluntary, consensus-based, market-driven building rating system based on existing proven technology that evaluates environmental performance from a whole building perspective over a building's life cycle. LEED™ is intended to be a definitive standard for what constitutes a green building.

The US Green Building Council's LEED Green Building™ Rating System is based on accepted energy and environmental principles that strikes a reasonable balance between known effective practices and emerging concepts. Unlike many other rating systems currently in existence, the development of the LEED Green Building™ Rating System has been open to public scrutiny and has involved the participation of virtually all segments of the building industry including product manufacturers, environmental groups, building owners, utilities, state and local government, research institutions, professional societies, colleges and universities.

LEED™ is a self-certifying system designed for rating new and existing commercial, institutional, and high-rise residential buildings. It is a feature-oriented system where credits are awarded to applicants that earn two-thirds of the available credits and meet all prerequisites. The system is designed to be comprehensive in scope, yet simple in operation."

While the EPA Regional Headquarters did not go through the final certification process with the U.S. Green Building Council, the building team members worked to improve the building in areas such as energy efficiency, indoor air quality, water quality, landscaping/exterior design, recycling and other environmentally sensitive categories. Architects, Engineers, Contractors, Government Consultants and various other sources combined their ingenuity and expertise to support design improvements to the EPA Regional Headquarters in 34 of the 44 LEED™ 1.0 identified environmental performance areas.

# ENERGY EFFICIENCY



Many building features contribute to exceptional energy efficiency. The building exceeds the requirements of ASHRAE/IES Standard 90.1-1989 "Energy Efficient Design of New Buildings Except New Low-Rise Residential Buildings".

## BUILDING EXTERIOR

The building has relatively long north and south walls, with shorter east and west walls. This creates energy efficiency due to the fact that the winter sun will penetrate the south wall throughout the day. The summer sun is higher in the sky, which creates more reflection of the midday sun's heat off of the south facing surfaces. The late afternoon and evening sun will broadcast onto the shorter surfaces.

The building's atrium glass has a low-emissivity to allow visible light to enter while reflecting larger percentages of infrared light. The windows throughout the building, also low-e rated, are inset and shaded by the building walls and light shelves. These shelves reflect light upward across ceilings, thereby projecting the light to interior spaces which increase their attractiveness and creates more comfort. The canopy and trees shade the west entrance of the building.



EXTERIOR LIGHT SHELVES

## LIGHTING

The atrium design allows most of the office space in the building to receive natural light. The natural lighting effect is enhanced using light shelves.



INDIRECT LIGHTING

Open office areas use indirect lighting with task lights. The general lighting level is  $\pm 25$  footcandle at the desk surface, rather than 50 footcandle typically used in most office buildings. Because illumination is a squared relationship,  $0.5^2$ , or only 25% of the general light is required, and only 25% of the heat needs to be removed by the cooling system.

All occupied spaces utilize motion sensors to detect occupants for the control of the general lighting. There is one sensor per 1000 square feet. The general lighting uses a more energy efficient T-8 fluorescent bulb with electronic ballast.

Some incandescent lighting is used to highlight conference and training room walls because it is more aesthetically pleasing and the light dimming control will be more precise. In order to conserve energy, the building's exterior lighting is on timers.

## THERMAL SYSTEMS

A state-of-the-art building automation system offers computerized monitoring of the energy related information throughout the building and controls equipment accordingly.

# ENERGY EFFICIENCY



CHILLER ROOM

A chilled water system and central air handling system, located in an equipment room immediately underneath the domed roof, provides cooling for the building. Two large rotary screw chillers, 231 kilowatts each, use environmentally friendly refrigerant (HFC-134a). A constant volume primary chilled water loop feeds variable frequency drive secondary pumps, and these provide water to the coils in the four large air handling units (AHUs) serving all five floors of the building.

The four AHUs have variable frequency drive fans with 200,000 cubic feet per minute (94,400 liters/sec) total capacity. The supply air system has variable air volume (VAV) boxes with a maximum 2000 square feet of building area served per box. Cool air is provided at 55° F to 65° F as determined by the building automation computer to supply effective cooling for all spaces and to minimize energy consumption.

The perimeter boxes have fans that can either draw from the supply air ductwork, or the ceiling plenum, and push air through electric heating coils that have a minimum of two stages of heat. The large conference rooms and training rooms have two boxes and dual setting thermostats that stage the boxes on a one-at-a-time basis. Approximately eight separate exhaust systems provide normal exhaust for the large conference rooms. Toilet rooms have separate exhaust as required by code. Garage levels one and two are ventilated with 6 air changes per hour in order to remove the accumulation of any dangerous combustion products. Sensors provide input to the building's automated computer system so that safe operation is monitored. The atrium's smoke evacuation system requires 280,000 cfm be exhausted. The return air fans provide two-thirds of the smoke evacuation and dedicated smoke evacuation fans accomplish the remaining one-third. Balcony doors open automatically to facilitate make-up air.

## ELECTRIC VS. GAS

The building was initially intended to be heated with natural gas. During building design, Koll Development Company teamed-up with the Board of Public Utilities, Kansas City, Kansas, and structured an Economic Development Rate Rider for this building. This rider offers a 5-year, stair-stepped discount on the cost of electric service and its application will result in an estimated energy and maintenance cost savings of \$1,200,000 during the 10-year EPA lease. Electric utility companies across the nation are being urged to use low sulfur coal and to use environmentally friendly technologies to generate green power. The Federal Government is leading our nation in buying green power where it is commercially available.



MASTER ELECTRICAL PANEL

## WATER CONSERVATION / QUALITY

Low flow faucets reduce the amount of water used, and that reduces the energy required to heat hot water.

The EPA Green Rider for the Kansas City Regional office required, "water conservation, through low flow shower heads and toilet room fixtures, landscaping with native species and drip irrigation systems."



DRIP IRRIGATION



# OPERATIONS & MAINTENANCE



This section addresses chemical use and storage, occupant recycling and the architectural entries of the building. The focus of this section will be on the basic layout of the building, the choices made in that layout, and the ongoing commitment toward keeping the building's operations and maintenance environmentally friendly. The intent is to showcase the thought process that went into the decisions and choices made in this section.

## CHEMICAL STORAGE & USE

All chemical storage and mixing areas for housekeeping products were designed and installed to allow for adequate and secure product storage. All locations have ample room for mixing concentrated chemicals. Drains are plumbed for the appropriate disposal of liquid waste products. Each location is operated under 10% negative pressure and equipped with separate outside venting to keep chemical fumes from spreading throughout adjacent areas.

In keeping with the "Off the Shelf" building theme all cleaning and mechanical chemicals used for building operations are environmentally preferable products where competitively priced. Material Safety Data Sheets are available and maintained on site for all the products in use.



TYPICAL JANITORIAL STORAGE CLOSET

## OCCUPANT RECYCLING

This multi-story building has a recycling collection and sorting room on every floor. The collection room is located next to the freight elevator for easy access and transfer of recycled material between floors.

The collection room allows for the easy sorting of white paper, mixed paper, newspaper, cardboard, and aluminum cans. Organic waste and un-recyclable items will be disposed of separately. At least 80% of the building's waste-stream should be diverted by using these methods.

## ARCHITECTURAL ENTRIES

The architectural entries are designed to prevent undesirable air particles from entering the building. The building is designed to operate under 10% positive air pressure thus limiting infiltration. The entire return system is fully filtered to remove undesirable air particles.

Originally designed as a permanent grating "walk-off system", an easier to maintain stone floor with walk-off carpets was eventually utilized offering lower capital and operational costs. The carpets chosen used recycled rubber from tires.



WEST ENTRYWAY

# EXTERIOR ENVIRONMENTS



This section addresses all the design and construction factors of the New EPA Region 7 Headquarter's Building which may have an impact on the exterior environment. The exterior environment includes the ambient (outdoor) air, soils, groundwater, and surface water, including all animal and human life supported by these media.

## LANDSCAPING

The building's exterior landscaping was designed to emphasize the use of native plants which will require less water and maintenance than plants imported from another environment. The plants selected are tolerant of local climate, soils, and are not totally dependent upon receiving water from a municipal potable water source in order to stay alive. This design incorporates the use of minimal to zero harmful pesticides. Consideration was given to site functions for humans and wildlife as well as anticipating the cycles of use throughout the day, week, and year. Consideration was also given to extremes of climate, annual solar angles with patterns of light or shade, annual direction and intensity of breezes as well as seasonal color and life span of plants. The landscape concept was formal in keeping with the character of the building and its municipal setting.

More than forty shade trees were planted within the visitor parking area on the west side of the building. These deciduous trees will provide a considerable amount of shade to this area in the summer months and allow for solar heat gain in the winter when the leaves have fallen from the trees. A colonnade of ornamental trees were planted in the parking garage planters on the east side of the building.



SHRUB BEDS

These trees offer additional relief in the form of shade to those individuals approaching the building from the east parking lot. The shrub beds located throughout the site add visual interest to the site and serve functional purposes, such as softening the architecture, direct pedestrian movements, provide separation of spaces and aid in erosion control. All exterior paving is concrete with light gray coloring. One tree is planted on site for every 2,500 square feet of impermeable surface on the building lot.

## IRRIGATION

The irrigation system is designed with automatic valves that control individual zones. These zones are comprised of pop-up spray and gear drive rotors with matched precipitation rates for uniform water distribution. The valves are operated by an advanced water-management controller with beneficial water saving features, such as water budgeting, programmable rain delay, and cycle soak. The irrigation system includes probes which measure the moisture content in the soil. Therefore, the vegetation is watered only when the moisture is needed. Water conservation for the landscaping complies with the Department of Energy's International Performance Measurement and Verification Protocol for water consumption. In order to promote better water quality in the runoff water, sand/oil interceptors have been installed in the parking lot drains.

## EROSION CONTROL

Erosion is another important element of site development as well as landscaping. Due to raised environmental awareness and the rising costs of repairing the damage erosion creates, erosion has become an important consideration for all potentially affected projects. Construction sites with slopes that are bare, along with surface drainage areas, are especially subject to erosion. Erosion reduces the productivity and usability of land areas. The sediment run off

# EXTERIOR ENVIRONMENTS

resulting from this erosion finds its way to streams, rivers, and other bodies of water, thus choking them and adversely effecting wildlife habitat. Erosion is an effect of multiple causes. Developing land is one of them. Vegetation helps to control erosion by keeping the water from washing silt and pollutants into streams. At this site, erosion was controlled during construction with the use of sand bags, straw bales and a silt fence.

When an area is developed it can cease to absorb rainwater, thus flooding streams, eroding banks, and sending silt into water ways. Erosion is still a consideration after construction is completed. The sloped bank near the northwest corner of the building is the only location where erosion control is needed. Erosion at this location is controlled by planting low spreading shrubs on the slope. In addition, a Geoweb cellular confinement system is used within the shrub bed to hold the soils on the slope. The Geoweb system is a jute or organic cover system of mats with integral plant seed designed to be rolled out or laid on the soil surface to mitigate erosion and potential turbidity.



Erosion control at this site is in compliance with Sections 4.2 e. & f. of the Maryland Model Erosion and Sediment Control ordinance and Section 6 (Group 2) of the Maryland Model Storm Water Management ordinance.

## OZONE CONSIDERATIONS

Ozone is a gas composed of three atoms of oxygen ( $O_3$ ) and can be found in the air that we breathe at ground-level as well as in the upper atmosphere. The ozone located at ground-level can cause detrimental health affects and damage to the environment. Ozone in the upper atmosphere is beneficial, as it forms a protective layer that shields the earth from harmful ultraviolet radiation.

## GROUND LEVEL OZONE

Ground level ozone is commonly referred to as smog. It is produced by a combination of pollutants from many sources including smokestacks, cars, paints and solvents. When a car burns gasoline, releasing exhaust fumes, or a painter paints a house, emissions of nitrogen oxides (NOx) and volatile organic compounds (VOC) rise into the sky and react in the presence of sunlight forming smog.

Smog can cause a variety of health problems because it damages lung tissue, reduces lung function, and adversely sensitizes the lungs to other irritants. Smog also interferes with the ability of plants to produce and store food making them more susceptible to disease, insect attack, and other pollutants.

### Smog causes health problems:

- Acute respiratory problems
- Aggravates asthma
- Reduces lung capacity
- Inflames lung tissue
- Worsens heart disease
- Impairs body's immune system

## GROUND LEVEL OZONE = SMOG

Since NOx and VOCs are the two primary precursors to the formation of smog, the minimization or elimination of these two compounds during planning or construction is ideal. Since automobiles contribute more than 50% of the precursors to smog, the use of alternative transportation will decrease the concentration of smog.

Alternative transportation is when an individual chooses to get to their destination by some other means than by driving a motor vehicle. Some examples of alternative transportation include walking, riding a bike, taking public transportation such as a bus or train, and carpooling.

One element of design that is being incorporated into this building project is the construction of a combination bike trail and jogging path. This bike trail / jogging path is an attractive environmental feature as it incorporates the planting of trees along its half mile length. It is a total of ten feet wide, in which four feet is dedicated to the jogging path. It provides a "safety zone" from automobiles for cyclists and pedestrians. If an employee chooses to walk or ride their bike to work, rather than getting to work in a motor vehicle, they are significantly reducing the amount of contributors to smog. For more information on the planning and design of this bike trail/jogging path, contact the Kansas Department of Transportation at (785) 296-7448.

# EXTERIOR ENVIRONMENTS

As an incentive to interests EPA employees to participate in alternative transportation (thus reducing automobile emissions), the EPA provides for FREE transportation. The Kansas City Regional EPA Headquarters office participates in a reimbursement program, called the Transit Subsidy Program, where employees can have all of their bus fare reimbursed, if they ride the bus. For more information on the Transit Subsidy Program, contact the EPA Regional Transportation Coordinator in EPA's Air Program at (913) 551-7020.

In addition to EPA's Transit Subsidy Program, Kansas City's three transit systems have cooperatively agreed to allow anybody to ride any of the three transit systems free of charge on "Ozone Alert Days." "Ozone Alert Days" are days when smog is at a high enough concentration to cause health concerns. Employees located in this building or those visiting are welcome to join in this cost-effective effort to reduce the contributors to smog. For more information about this program, call the Metro at (816) 221-0660.

Another incentive is provided for EPA employees to use alternative transportation. Preferred parking is being provided for all employees at this Kansas City location who car-pool.

In addition to alternative transportation, the reduction of smog was also considered when selecting building materials. Low emitting VOC carpets, adhesives, architectural sealants, and paints were specifically selected for this building in order to help reduce the contribution of VOCs into the atmosphere, hence reducing the formation of smog.

## STRATOSPHERIC OZONE

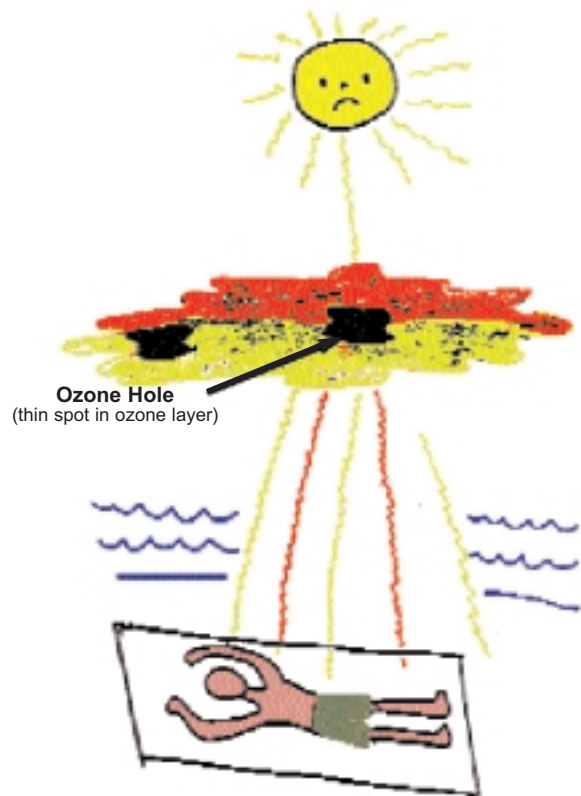
As mentioned above, the ozone in the upper atmosphere (the stratosphere) is beneficial, as it forms a protective barrier, shielding the earth from the sun's harmful ultraviolet rays. This ozone occurs naturally, yet is being destroyed by manmade chemicals called chlorofluorocarbons (CFCs), halons, and other ozone depleting substances (used in coolants, foaming agents, fire extinguishers, solvents, and aerosol propellants). These manmade chemicals escape into the air and damage this protective layer of ozone by thinning it similar to clothes getting worn to threads at certain spots.

These thinning spots in the ozone allow ultraviolet rays to make their way to the earth's surface. Ultraviolet rays are known to cause skin cancer, cataracts, and impair immune systems. These harmful rays also damage crops and cause diseases in plants.

## Health effects of ozone (upper atmosphere) depletion:

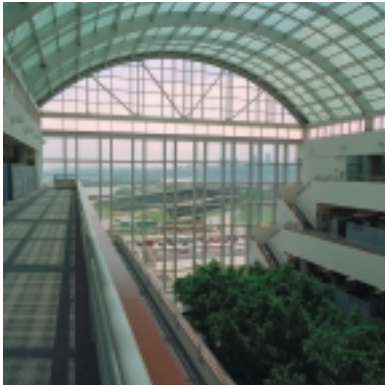
- Skin cancer
- Cataracts
- Impair's body's immune system

The mechanical equipment installed in this building eliminates the use of CFC and HCFC refrigerants, thus will not contribute to the stratospheric ozone depletion problem.



*When the ozone layer is damaged, there is an increase in harmful rays from the sun reaching the Earth. These rays can harm both human health and the environment.*

# INDOOR ENVIRONMENTS



This section will address all the items presented previously focusing on some background information and the action taken by Koll, GSA, and EPA to use market, “off the shelf” products and procedures to enhance the indoor health of the New EPA Region 7 Headquarters Building.

## INTRODUCTION

What does it take to create a healthy indoor environment for EPA Region 7 employees? This is a question that Koll Development Company and Langdon Wilson Architects had to consider when designing the new EPA Regional Headquarters office building. There is no more important issue facing facility managers today than the indoor environment and air quality, Koll Development Company and Langdon Wilson Architects placed great importance on operations and maintenance procedures. A healthy indoor environment cannot be sustained without careful attention to routine maintenance.

Several factors were considered in the design of the building to keep the interior of the building and the employees healthy:

- Air Quality
- Sound
- Visual / Aesthetics
- Lighting including artificial and natural light
- Heating / Cooling
- Smoke Free Environment
- Fitness Center
- Government supplied equipment

## AIR QUALITY

EPA has determined the average U.S. citizen today spends 90% of the time indoors. Indoor air pollution levels can be up to 96 times greater than outdoor pollution levels. Indoor Air Quality (IAQ) is one of the greatest health concerns in this country. Poor air quality can have a significant impact on worker health and productivity. The table below, “Indoor Air Quality Impacts on Health,” identifies the sources and symptoms of indoor air quality impacts on health.

A good program of filter changing, control system checks, and air / water system balancing will positively effect the air quality of the interior spaces. Interior finishes can also cause air quality problems. For chemically sensitive people, the effects can be severe. The EPA Regional Headquarters building contains low-emission finishes, including carpeting, paint, wall coverings, sealants, and varnishes.

### INDOOR AIR QUALITY IMPACTS ON HEALTH

CATEGORY	SOURCES	SYMPTOMS
Irritation	Formaldehyde, VOC's combustion gases, particulates, man-made fibers, and pesticides	Irritation of skin, upper airway, eye, nose and throat, headache, erythema
Pulmonary	Asbestos, combustion gases, Formaldehyde, ozone, particulates	Rapid breathing, fatigue, increased infections, pulmonary edema, asthma, allergies, flue-like symptoms
Cardiovascular	Carbon monoxide, particulates	Headache, fatigue, dizziness, aggravation of existing pulmonary conditions, heart damage
Nervous System	Carbon dioxide, carbon monoxide, Formaldehyde, VOC's	Headache, blurred vision, fatigue, malaise, nausea, impaired judgement
Reproductive	Formaldehyde, VOC's	Menstrual irregularity, birth defects
Cancer	Asbestos, radon, combustion gases, VOC's, particulates	Cancer of the lung, stomach, colon

# INDOOR ENVIRONMENTS

Koll's strategy in dealing with indoor air pollutants was to find material and set up procedures that eliminate the four main sources of indoor air pollution:

- VOCs, particularly formaldehyde, in building materials cleaning products and pesticides
- Bioaerosols from both indoor and outdoor sources
- Combustion gases from appliances and automobiles
- Particulates from fibrous materials and combustion gases.

Specifically, Koll Development Company used many building products that were environmentally sensitive, including a few products which met or exceeded the recycled content specified by EPA's Comprehensive Procurement Guidelines (CPG) which became effective after the building was contracted.

The table in the Building Products Appendix identifies the building product category, product, benefit, recycled content, EPA's CPG requirement, and the manufacturer. Some of the product categories are building insulation, cement and concrete, paints and coatings, ceiling systems, floor covering, and lighting and energy systems.

Since poor ventilation can be a major cause of indoor air quality problems, Koll Development Company relied on properly balanced and maintained ventilation systems that provide adequate outdoor air quantities to the building.

- Air handlers were selected that are easy to clean and tightly sealed. Additionally, they have a minimum of joints and other dust catchers, and have efficient filters.
- Inspection of air handlers are facilitated by good access doors and light or white-colored surfaces inside the air handlers to accommodate ongoing inspections.
- Condensate pans inside air handlers drain fully, and any debris will be removed from the pans.
- Fresh air intakes will be inspected to ensure that poor quality air is not drawn into the building from "short circuits" between exhaust and air intakes, or site-specific conditions such as wind patterns.
- Floor drains will be refilled periodically to prevent sewer gas from entering the building through dry traps.
- Paints and adhesives contain no or very low VOCs. Adequate "airing out" was done to remove the majority of the VOCs from the air prior to occupancy.

- Durable building materials were selected to eliminate the need for strong cleaning chemicals. For example, ceramic tile is used in entry areas rather than carpeting.
- During construction, all air duct openings were sealed with plastic to keep construction dust from entering the system.

Indoor air is inherently polluted by hundreds of indoor chemicals. The most common pollutants are carbon monoxide, formaldehyde, and benzene. Even humans emit bioeffluents which are potentially harmful to others in closed, energy efficient environments. To alleviate indoor air pollution, EPA's New Region 7 Headquarters Building took the traditional approach of controlling contaminates through filtration and developing procedures concerning building operations.

Koll Development Company promptly investigate indoor air quality (IAQ) complaints and implement controls including alteration of building operating procedures (e.g., adjusting air intakes, adjusting air distribution, cleaning and maintaining HVAC.).

Another step to control the contaminates in the air and add aesthetically pleasing features to the atrium is the addition of twelve Ficus Benjamina trees, one of the most aggressive pollution-fighting plants according to NASA tests. EPA research suggests one type of throat cancer caused by formaldehyde is the result of indoor air pollution. Studies show that commonly used indoor flowering plants can reduce levels of potential cancer-causing substances by up to 70 percent in 24 hours.

## SOUND

Building acoustics have traditionally been a low priority compared to other indoor environmental problems, yet acoustically acceptable indoor environments increase worker satisfaction and morale. Irritating and unexpected noises create distractions that reduce productivity. Bathrooms, plumbing fixtures, exhaust fans, mechanical ducts, outdoor condensing units, lawn maintenance equipment, traffic, and airplanes are all irritating sources of noise. Some noises created in building systems, such as fluorescent lamp ballasts that buzz, or HVAC systems that generate and transmit various noises, can be difficult to trace.

Background noise is beneficial if it is of the proper level and tonal quality. Above a level of Noise Criteria 40 (NC-40), background noise interferes with speech and telephone conversations. If it is too low, it fails to drown out intrusive noises and diminishes privacy.

# INDOOR ENVIRONMENTS

White noise or sound-masking systems artificially raise the background noise level to maintain speech privacy. Koll Development Company has introduced a fountain in the east end of the atrium that will provide a natural, soothing background noise. Koll also considered an array of speakers located above the finished ceiling. However, Koll found that many people find the use of white noise systems objectionable and opted only for the use of the fountain.

Additionally, the acoustical requirements in EPA's new building call for:

- Reverberation control - Ceilings in carpeted space have a Noise Reduction Coefficient (NCR) of not less than 0.55 in accordance with ASTM C-423. Ceilings in offices, conference rooms, and corridors having resilient flooring have an NRC of not less than 0.65.
- Ambient noise control - Ambient noise from mechanical equipment operates in a range of 18-28 Noise Criteria curve (NC) in accordance with ASHRAE Handbook in offices and conference rooms; NC 32 in corridors, cafeterias, lobbies, and restrooms; NC 50 in other spaces.
- Noise isolation - Rooms separated from adjacent spaces by ceiling-high partitions (not including doors) are not less than 40 Noise Isolation Class (NIC) in the conference rooms and 35 NIC in the offices following NIC Standards when tested in accordance with ASTM E-336.



## VISUAL

When employees or visitors enter the building on the east and west sides, they will be treated to carefully thought out designs in the spacious atrium floor plan with a fountain in the east end of the atrium.

The building incorporates several convenient employee entrances. Upon leaving vehicles in the parking structure east of the building, employees are afforded two entry alternatives. One option is to walk up the pedestrian pathway at the center of the parking structure and enter the building below the verandah at the east end of the building. Alternatively, the internal interconnecting stairs at the east end of the atrium continue down through the ground floor and connect the parking structure levels to the building. A garage elevator also travels from each level of the parking structure to the Plaza Level. Employees accessing the building from off-site bus stops or parking lots to the west, enter the building from that side near the visitor's entry at a key card controlled access point.

The building's design accommodates a separate visitor entrance. Once arriving from the plaza at the west end of the site, visitors enter the building at a security check area located adjacent to the elevator lobby and building core area. This is the only building entry not controlled by a key card security device. Visitors can conveniently access the training rooms and several conference facilities that lie directly adjacent to the Plaza Level lobby in the base of the atrium.

The floors are configured so that employee interaction and productivity are maximized. The open atrium facilitates the visual sighting of colleagues and encourages circulation and interaction within the office area. In addition, the Plaza Level verandah on the east side of the building invites employees to gather for lunch and conduct informal Team meetings when weather permits.

The large open floor plan and space configurations provide for efficient and flexible workspace planning. The floor plan is incorporated into an efficient "U" shaped design that implements a centrally located building core at the base of the "U". A pair of stairs are located in the building core that interconnect the office floors and allow employees to freely circulate. A second pair of interconnecting stairs that are open to the atrium are located at the ends of the "U". These stairs join the unique terraced floors which provide a rich source of natural light to the walkways and work areas. As you go up each floor in the building, the widths of the "U" legs decrease from 90 feet to 53 feet. Since the inside of the "U" is an atrium, natural light is no further than 45 feet from all office space in the legs. These bay depths, combined with efficient 30 feet by 30 feet column spacing, allow workspace areas to be efficiently and flexibly planned on each office floor.

The building's core is located at the west end at the base of the "U" and provides for an inviting, yet compact arrangement of three passenger elevators, one freight elevator, restrooms, two stairwells, and other core elements.

# INDOOR ENVIRONMENTS



ATRIUM LOOKING EAST

Located on the interior of the floor plan, the core placement allows the adjoining space on all office floors to benefit from the atrium and exterior natural light sources.

The building placement and atrium orientation capitalize upon the site's excellent views of the river confluence and downtown Kansas City, Missouri. The atrium leverages the enjoyment of this perspective by allowing more employees to experience it within the building. The placement of the building on the site's elevated west side enhances the western views that encompass downtown Kansas City, Kansas and the Federal Courthouse. The liberal use of windows on the building's west side provides for open and expansive perspectives to the downtown area.



ATRIUM LOOKING WEST

## LIGHT

Day lighting and artificial lighting are required in order to perform visual tasks, to provide views to the outside, and to provide a connection to the daily rhythms of the natural environment. Sunlight provides an equal spectral distribution of visible light frequencies to produce 'white light' and provides the truest color rendition. Artificial light is limited in the frequencies it can emit, often producing blue- or yellow-tinted light. Lighting levels and distribution can either enhance or detract from the efficient use of both day lighting and artificial light for energy savings and occupant comfort.

The two components of interior lighting are ambient and task lighting. Ambient lighting provides general lighting for orientation and background visual identification. Task lighting provides focused lighting, which will aid in the performance of concentrated and small-scale tasks such as reading. Windows and light fixtures have been properly located and balanced to provide the most efficient and visually pleasing lighting in interior environments.

## ARTIFICIAL LIGHT



INDIRECT LIGHTING

Lighting accounts for 25% of the electricity used in the Federal sector. If new lighting technologies were used everywhere in the Federal sector, electricity required for lighting would be cut by 50%, electrical demand reduced, and working environments improved.

The Regional Headquarters building uses compact fluorescent lamps (CFLs) which are energy-efficient, long-lasting substitutes for the traditional incandescent lamps. Introduced in the early 1980s, CFLs use about one-half to one-tenth the energy to produce the same light output.



# INDOOR ENVIRONMENTS

They also last up to thirteen times longer than the incandescent lamps they replace, providing an attractive return on investment.

Lighting is controlled automatically by various methods to save energy:

- energy management and control systems
- daylight sensors that detect available daylight
- control fixture outputs accordingly
- occupancy sensors which prevent energy waste by turning off lights operating in unoccupied spaces
- by dimming lights according to daylight level within the building

All conference rooms are equipped with occupancy sensors that are set to turn off the lights after a period of inactivity.

## NATURAL LIGHT

Day lighting and artificial light fixtures can be significant sources of heat gain in commercial buildings. All day lighting strategies need to be designed to minimize heat gain along with the reduction in the heat gain of the fixture. The additional first costs of day lighting devices, such as light shelves and other daylight collection devices, should be balanced against the reductions in costs for interior light fixture, and long-term electricity use costs.

Direct sunlight can damage interior furnishings, and the ultraviolet radiation component of sunlight can combine with volatile organic compounds (VOCs) that might be present to form ground-level ozone, which is hazardous to human lung tissue. VOCs should be minimized as a matter of course, and space planning should specify interior finishes and furnishings that have low to zero VOC emissions.

Koll Development Company addresses these issues by innovative designs in which all exterior windows are equipped with one-inch wide, non-corroding, slated horizontal aluminum window blinds.

## HEATING / COOLING

The variety of functions anticipated for the building warrants the need for built-in system flexibility. The building includes numerous spaces, requiring separate temperature control zones, i.e., conference rooms, office areas, and computer areas.

The design condition of the building calls for a temperature of 74-76°F during the summer in occupied areas of the building.



During the winter the temperature inside will range from 70-74°F. These temperatures must be maintained throughout the building, regardless of the outside temperature, during the hours specified in the lease. During non-working hours, heating temperatures shall be set no higher than 55°F and air conditioning will not be provided except as necessary to return space temperatures to a suitable level for working hours.

Special purpose areas (such as photocopy centers, large conference rooms, computer rooms) with an internal cooling load are independently controlled. Concealed package air-conditioning equipment is provided to meet localized spot cooling of tenant's special equipment.

Intakes for outside air are located to avoid contamination of the air from sources such as vehicle exhausts from the garage, loading docks and street traffic, exhausts from restrooms, sanitary vents, and cooling towers. Ducts and plenum were constructed and maintained to minimize the potential for growth and dissemination of micro-organisms. Humidity will be maintained at 30 percent during the winter to 50 percent during the summer.

## SMOKE FREE ENVIRONMENT



# INDOOR ENVIRONMENTS

In an August 9, 1997, Executive Order, President Clinton banned smoking inside all Federal buildings. Smoking is currently prohibited inside all buildings managed by GSA and in many other facilities where Federal employees work.

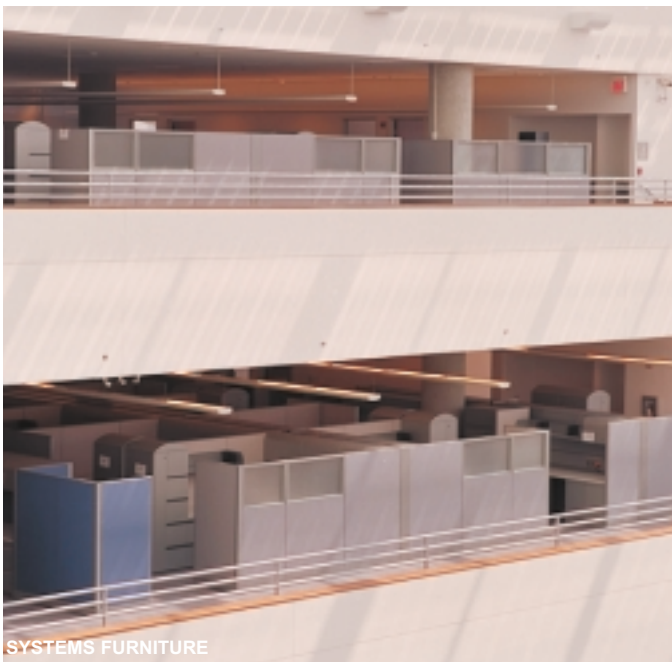
The goal of these actions is to "protect Federal Government employees and members of the public from exposure to tobacco smoke in the Federal workplace."

## FITNESS CENTER

The Regional Headquarters building houses a 1,200 square foot fitness center on the main floor. The center will be equipped by the EPA with various weight machines, free weights, and aerobic equipment such as treadmills and stationary bikes. After working out, employees shower in either of the two locker rooms adjoining the center. A regular program of physical fitness decreases the body's susceptibility to illness and promotes a more alert focus during work.

## GOVERNMENT-SUPPLIED EQUIPMENT

EPA required emission testing assessment of environmental policies in place at each manufacturer's facility, and the environmental characteristics of all workstations submitted for consideration. These characteristics include issues of global pollution, energy consumption, and resource conservation, as they pertain to factory and office procedures, and to the workstation product. Human health and safety issues were also considered.



Emission testing included an indoor pollutant source management plan which provides assurance that minimum pollutant emission rate standards for components and finish materials are met by applying uniform testing controls and procedures. Products include a single, easily assembled, composite workstation, incorporating panels, components and related modular units. The target emission standards are defined as those "emission rates" of pollutants emanating from the product. Fabrics are excluded from the testing procedure.

EPA was not looking for the "greenest" vendors. However, EPA was concerned that the vendors providing furniture, and accessories demonstrated due diligence relative to environmental, sustainable and ergonomic issues. Vendors were encouraged to provide written detail describing the environmental, sustainable characteristics of their systems. EPA uses electronic white boards in conference rooms to eliminate or reduce chalk dust and increased maintenance.



# BUILDING MATERIALS



As the 21st century approaches it has become incumbent to design and build in a more environmentally responsible manner. There is more and more evidence that supports the need for designing for future reuse and adaptability. It is an amazingly simple and relatively inexpensive venture. Today's building products and materials are more environmentally sensitive, or "greener" than ever.

## INTRODUCTION

An excellent example of this environmentally responsible approach is the new 200,000 square foot EPA Regional Headquarters office building being constructed in downtown Kansas City, Kansas. The building design and site location was strategically assessed to take advantage of passive solar energy.

Recycled materials were used extensively in the finish selections of the EPA building. Early in the scope development stage, only a limited number of recycled materials and finishes were specified. Dialogue between the EPA, Koll Development and the designers from Langdon Wilson Architects resulted in nearly all the interior finish selections containing recycled or environmentally friendly content.



FOUNDATION INSTALLATION

Following site preparation the auger piles, footings and foundations were constructed with concrete containing 1,000 tons of Fly Ash. Fly Ash is a coal combustibile byproduct from coal-fired electric generating plants. It's in the form of a particulate (much like dust) and when it gets into the air it can cause various health problems, such as eye, nose and throat irritations. Utilizing Fly Ash in concrete design not only locks it up so it doesn't blow in the air, but it also improves the strength and stability of concrete. Typically there is no cost increase to use Fly Ash in concrete, which is always preferable.

Once the new foundation was complete it was sealed with bentonite water proofing and a modified bitumen membrane. This greener alternative was utilized instead of a petroleum-based product.

## SUBSURFACE MATERIALS

The owner took possession of the site with a worn concrete foundation in place. As part of the site work, the old foundation was removed and a great deal of the rubble was recycled as roadbed. The rubble was used at the fill site for temporary roads. The part of the foundation that could not be recycled was disposed of in an environmentally sound manner.

## EXTERIOR FINISH MATERIALS

The exterior of the building features a majestic skylight and glass wall construction. Exterior facing materials include polished Texas granite and precast concrete. The skylight and glass wall integrated design features allow for daylighting and passive solar heating in the building. Both of these features assist in highlighting the spacious 4 story, stair-

# BUILDING MATERIALS

stepped atrium that dominates the center of the building. The aluminum mullions and trim on the windows, sheer wall, sunscreens, cable trays and skylight are all constructed from *12.9 tons of recycled aluminum*. All of the glass features play a significant role in the energy profile of the building.

As mentioned earlier the "hard" materials on the exterior of the building are polished Texas granite and precast concrete. In the early stages of the project, India sandstone was considered for the exterior of the building. The owners of the building reaffirmed their desire to retain a more democratic presence and chose to make the switch to the Texas granite. In furtherance of the "green" effort, aggregate used in the precast is from local Kaw River gravel surplus instead of a synthetic or imported aggregate.



PRECAST SHOT

Great care was taken to strategically design and place the facing windows and glass wall to take advantage of the solar heat, but also to prevent overheating in the summer months. *Low emittance (Low-e)* coatings were used on North side of the building to reduce the heat loss during the winter months.

## INTERIOR FINISH MATERIALS - WALLS

The paint used on this project contained no volatile organic compounds (VOCs). This type of paint is readily available from major manufacturers and is competitively priced. The vinyl wall covering used in this project contained 100% clean water based inks.



TYPICAL RESTROOM

In restrooms, the floors and walls were constructed with ceramic tile made from over 70% post-industrial recycled waste glass. Nearly thirty-eight tons of recycled glass was used in the construction of this building. The lavatory counters are stone, thus inert, non-toxic, and chemically non-reactive hypoallergenic material. There was no additional charge associated with the use of the ceramic tile that contained recycled glass.

## INTERIOR FINISH MATERIALS - FLOORS

The carpets selected are from Lotus and Shaw manufacturers. *Both are non-latex products and are 100% recyclable*. The Shaw carpet is made of 25% recycled material. The carpet installation was a glue-down process that *used a no VOC glue*. These carpets are 100% solution dyed, which extends the life of the carpet. To accent the carpet installation, the vinyl wall base is an antimicrobial product using an adhesive with *no VOCs*.



EXECUTIVE 5TH FLOOR AREA

# BUILDING MATERIALS

The lobby and atrium floors both feature the same Texas granite used on the exterior of the building. However, it was not polished like the exterior facade. This allows the building design to gracefully flow from exterior environments to interior spaces with a contiguous "feel." The wall base in the atrium is wood, which provides richness of finish and is 100% recyclable.

In selected areas of the building, such as server areas and storage rooms, vinyl composition tile (VCT) was installed because of the durability and heavy traffic. Mannington Impressions VCT was selected because it met the environmental goals of the Team. *It is the only VCT to feature partially recycled content and green manufacturing practices in its production.*

In these same server areas and storage rooms where millwork is installed, the plastic laminate on the counters has partially recycled content. The manufacturer, Wilsonart, is also environmentally responsive in its manufacturing practices.

## MISCELLANEOUS



ROOFING SYSTEM

The ceiling system that was used is an acoustic tile and grid system. The ceiling tile is made from 93%-recycled slag and the grid system from light gauge steel made from 67% recycled material. To accompany this system, indirect ambient lighting was installed to enhance the light levels in the building and use the outside light to the best advantage. Additional lighting will be supplemented in the use of task lighting at the desktop. The overall effect is a more aesthetic, evenly lit building than the usual 2 x 4 fluorescent lighting to which we have all grown accustomed. The doors throughout the building are American Red Oak. They are a very durable product and are not an endangered wood species. Langdon Wilson Architects were very proactive in

selecting a wood that came from a well-managed forest with certifications for its management and replenishing practices.

And finally, one of the basic building requirements the government specified in its solicitation for offer was that the building include no asbestos-containing materials (ACM). This building complies with that requirement.



5TH FLOOR CONFERENCE ROOM

As you can see there are several "hidden benefits" that have the ability to produce a very professional and elegant building. With a little research and legwork a dramatic difference can be made in the environment without sacrificing the beauty of the space or the cost of the materials.



COMPUTER ROOM

# ENVIRONMENTALLY SENSITIVE BUILDING PRODUCTS

This table compares the identified material incorporated in the new EPA Region 7 Building with the EPA's Comprehensive Procurement Guidelines (CPG). The different categories are identified by: **Normal Text [Bold & Red]**; **CPG Products included in building at given percentages {Bold Green}**; and **Products containing a recycled content or other environmental benefit but not necessarily meeting the CPG requirements Blue & Bold**.

PRODUCT CATEGORY	PRODUCT	NEW BUILDING DESIGNATED BENEFIT	RECYCLED CONTENT IN NEW BUILDING	MATERIAL	CPG REQUIREMENT		MANUFACTURER/ CONTRACTOR (ADDRESS & ADDITIONAL INFORMATION WILL FOLLOW THE TABLE)
					POST-CONSUMER CONTENT (%)	TOTAL RECOVERED MATERIALS CONTENT (%)	
Insulation	Fiberglass	The insulation provides effective resistance to heat transfer between air spaces creating better efficiency and energy conservation	50%	Glass Cullet	—	20-25	Owens Corning
Acoustic Ceiling	Acoustic Ceiling Tile	Conditioned sound	93%	Recycled Slag	N/A	N/A	US Gypsum
	Acoustic Ceiling Grid System (Donn 15.16")	N/A	67%	Light gauge Steel	N/A	N/A	US Gypsum
Cement & Concrete	Coal Fly Ash	The use of Coal Fly Ash and GGBF	10%	Due to variations in coal Fly Ash, GGBF slag, cement, strength requirements, costs, and construction practices, EPA is not recommending recovered materials, content levels for cement or concrete containing coal fly ash or GGBF slag. EPA is, however, providing information about recovered materials content in the CPG.			Ashgrove Products
	Ground Granulated Blast Furnace (GGBF) Slag	Slag improves the strength and stability of concrete	20%				Ashgrove Products
Countertops	Lavatory Counters	Inert, non-toxic chemically non-reactive hypoallergenic material.		Granite	N/A	N/A	Cold Spring Granite
Insulated Windows & Glazings	Insulated Windows	Energy Savings	60%				Viricon
	Window Overglazing	Energy Savings	60%				Viricon
Flooring	Carpet Lotus Carpet	Non-latex products, goods are 100% recyclable.					
	- Nylon Carpet Face Fiber		50%	Nylon	N/A	N/A	DuPont
	- Recycled Source Nylon Carpet		50%	Nylon	N/A	N/A	DuPont
	Carpet Adhesive - SB latex resin emulsion	Very low toxic Adhesive System	10%	Water, SB latex Tackafiena resin, Kaolin clay, & processing oil	N/A	N/A	
	Floor Tiles & Patio Blocks:						
	- 5th Floor Patio Blocks	Access to satellite dish. Only VCT to	100%	Concrete	N/A	N/A	West Tile
	- Terra Traffic Bathroom Floor & Walls Tile	feature partial recycled content Tile is made from over 70% post-industrial recycled waste glass.	60%	Vinyl Composition	N/A	N/A	Terra Green
- Ceramic Tile	Inert, non-toxic, chemically non-reactive hypoallergenic material	70%	Tile (VCT) Waste Glass	N/A	N/A		
Granite Flooring		100%	Granite	N/A	N/A	Cold Spring Granite	
Lighting & Energy Systems	Energy Efficient Lighting Products						
	- Indirect Lighting	These lighting products are used in 100% of the open office and public areas in the building providing even light distribution throughout, to reduce eye strain of employees and to lower energy consumption					Finelight
	- Electronic Ballast						Motorola
	- Watt Stoppers						Thomas Company
	- Motion Detectors						Thomas Company
- Core Lighting on Energy Management							
Flourescent Task Lighting	Energy Savings						EPA Supplied
Task Lighting with Occupancy Sensors	Energy Savings						EPA Supplied
Energy Efficient Computers	Energy Savings						EPA Supplied

PRODUCT CATEGORY	PRODUCT	NEW BUILDING DESIGNATED BENEFIT	RECYCLED CONTENT IN NEW BUILDING	MATERIAL	CPG REQUIREMENT		MANUFACTURER/ CONTRACTOR (ADDRESS & ADDITIONAL INFORMATION WILL FOLLOW THE TABLE)
					POST-CONSUMER CONTENT (%)	TOTAL RECOVERED MATERIALS CONTENT (%)	
Paints & Coatings	Reprocessed Latex Paint: - White, Off-white, Pastel Colors	No VOC's	30%	Latex	20	20	Sherwin Williams
	- Grey, Brown, Earth-tones, and other Dark Colors		25%	Latex	50-99	50-99	Sherwin Williams
	Consolidated Latex Paint Primer		30%	Latex	100	100	Sherwin Williams
	Latex Paint Overcoat - color Frazee		40%	Latex	N/A	N/A	Sherwin Williams
Recycling System	Recycling & Specialty Waste Receptacles	Provides recycling opportunities					EPA Supplied
Shower & Restroom Dividers/ Partitions	Steel Dividers	Utilizes recycled recovered products	10%	Steel	16	20-30	All American Metal Corporation
	Plastic Laminate		30%	Plastic	20-100	20-100	All American Metal Corporation
Water Conservation Products	Urinals: Mister Miser	Water Saving Fixtures					Crane Company
	Toilet Adapters: Flushometer ADA Retrofit Handle Flushometers						Sloan
	Low-Flow Shower Heads: Low-Flow Shower Heads						
Walls & Doors	Vinyl Wall Covering (Type 2)	Manufacturer uses 100% clean water based inks	N/A	Water base inks	N/A	N/A	Koroseal
	Wood Wall Base (Lobby Area)	Reduced PVC's from substitution of rubber base	N/A	Wood	N/A	N/A	Woodcraft Company
	Vinyl Wall Base (Johnsonite)	Antimicrobial product using an adhesive with no VOC's	40%	Vinyl	N/A	N/A	Woodcraft Company
	Plastic Laminate	Partial recycled content, environmentally responsive manufacturer. LSI utilizes recovered and renewable forest products. The materials contain no heavy metals, rain forest timber, or tropical hardwoods. They also contain no ozone depleting substances thereby reducing toxicity releases by 98%. Durable, not endangered wood pieces from a well managed forest.	75%	Plastic Veneer	N/A	N/A	LSI Company
	Wood Doors (American Red Oak)	Osh Kosh utilizes 40% recovered wood products in their doors.	40%	Wood	N/A	N/A	Osh Kosh Company

Please contact Marc Matthews, Pollution Prevention Coordinator, US EPA Region 7, at (913) 551-7517 if you wish to receive additional copies of this table, to discuss "green" issues, or talk about the features included in the Environmentally Sensitive Building Products table.

# TEAM RECOGNITION

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JEROME KLINT

Leader of the Green Team and Vice President of Construction Management with the Southwest Division of Koll Development Company located in Dallas, Texas. His education is from Gustavus Adolphus College in St. Peter, Minnesota. He is completing his certification for recognition as a Project Manager Professional. Jerry has a seat on the North Texas Board for the Make-A-Wish Foundation. Jerry extended his supervisory skills and development experience with The Green Team by organizing regular Team meetings, assisting with research materials, text and graphic preparation, editing and publishing arrangements and kept the Team motivated and on schedule. Jerry contributed the information regarding the building's history, design and LEED goals.



MADELYNN GARFFIE

Contracting Officer for the Heartland Region 6 of the General Services Administration which managed the build-to-suit construction process of the EPA Regional Headquarters located in Kansas City, Kansas. She holds a MBA from Rockhurst College, an Undergraduate Degree from the University of Missouri with a BS in Space Planning and Interior Design. Other titles earned include Certified Realty Specialist, Real Property Administrator, Facilities Management Administrator, and Certified Commercial Investment Manager. Madelynn contributed her time and effort with the "Off the Shelf" publication by providing the information on building materials. The Green Team is grateful to Madelynn for sharing her invaluable knowledge with our book.



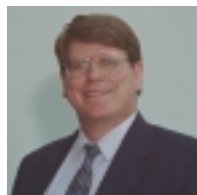
MARC MATTHEWS

Environmental Engineer with the Environmental Protection Agency Region 7 currently serving as the Coordinator for the Pollution Prevention Program located in the Solid Waste and Pollution Prevention Branch. His undergraduate work was in Environmental Engineering Technology at Kansas State University. He has a Master of Business Administration with major area of concentration in Human Resources from the University of Kansas. Marc's expertise provided information for the section on indoor environments and compiled the information for the "Environmentally Sensitive Building Products" table. Marc explores the ways the EPA Regional Headquarters was designed to help maintain a healthy and safe environment inside the building.



PATRICIA REITZ

Environmental Engineer with the Environmental Protection Agency Region 7 currently positioned with the Air Planning and Development Department. She holds a Bachelor of Science degree in Civil Engineering from Kansas State University. Pat provided the materials regarding the exterior environments. The Green Team thanks Pat for sharing her knowledge of the steps taken outside of the building to produce an environmentally sensitive atmosphere surrounding the project.



WILLIAM REGER

Recycling Coordinator for the Heartland Region 6 of the General Services Administration. He earned a Bachelor's degree in Business Administration from University of Kansas, has earned his Facilities Management Administration (FMA) designation from the Building Owners and Managers Institute International. He is an active member of the Building Owners and Managers Association (BOMA). Bill dedicated time and effort to the section of operations and maintenance of the EPA Regional Headquarters. The Green Team appreciates Bill's contribution of sustainable building techniques in the design, construction and operations area. We thank Bill for taking complex subjects and making them reader friendly.



# TEAM RECOGNITION

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DOUG BENTON

Mechanical Engineer in GSA's Energy Center of Expertise. He earned his Mechanical Engineering degree at the University of Illinois. He is presently enrolled in the Master of Science in Engineering Management Program at the University of Kansas. Other titles include Register Professional Engineer and Certified Energy Manager. Doug's 19 years of experience in the design, construction, operation and maintenance of buildings, campus utilities, power plants and central plants allowed him to provide us with information on the energy efficiency techniques being used in the EPA Regional Headquarters. Doug is a Certified Energy Manager and his wealth of knowledge on the subject was utilized heavily.



REBECCA BISHOP

Administrative Assistant for the Koll Development Company, Kansas City office. Becky's education is from the Kansas City, Kansas Community College, University of Missouri-Kansas City and Wayne State University in Detroit, Michigan. Becky was the point of contact for the "Off the Shelf" project and provided clerical support for the Green Team. Becky provided the material on the LEED Criteria and coordinated the self-certifications needed for the EPA Regional Headquarters' participation for a Green Building Award.



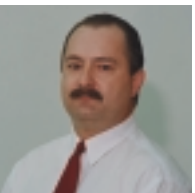
TRACIE FRAZIER

Marketing Coordinator for the Southwest Division of Koll Development Company located in Dallas, Texas. She is a graduate from the University of Texas at San Antonio with a Bachelors degree in Business Administration, Marketing. Tracie was responsible for the creative aspects of the book including layout, design, desktop publishing, coordination of graphics and editing.



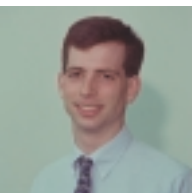
MURRAY NEWTON

Editor of the "Off the Shelf" publication is an Executive Vice President with the Southwest Division of Koll Development Company located in Dallas, Texas. Murray has a Bachelor of Science degree in Engineering Technology from Texas A&M University and is a Certified Professional Project Manager.



TIM EALEY

Construction Manager for Koll Construction, L.P.'s Kansas City office and a veteran of the real estate and construction industry with 20 years of experience. His education begins with being raised in the construction industry and culminated with a Master's Degree in Finance. Tim has had the hands on responsibility of managing real estate and construction projects as large as 130 million dollars. Tim has been an active member of the Metro 3 Arthritis Foundation's Board of Directors, the Foundation's executive committee and is the co-chair of the foundation's most successful annual fund raising event. Tim has been involved in the compilation of technical information for the design criteria and the LEED goals.



ANDREW KOLOSSEUS

Chemist with the Environmental Protection Agency Region 7 Solid Waste and Pollution Prevention Branch. He holds a Bachelor of Science degree in Chemistry from Willamette University in Salem, Oregon. Andrew assisted the Green Team in the final stages of the project.

# ACKNOWLEDGEMENTS

As we enter the new millennium, it has become increasingly evident that the building practices of the past 100 years must change if we are to assume greater responsibility for the welfare of our planet. If it seems that our global neighborhood is becoming a smaller place every day, then we must realize that our natural resources are dwindling along with it. If we equally share in this planet, then we equally share in this problem.

It is all too easy to back away from addressing "green" issues by claiming that solutions are too expensive, too time consuming and too specialized. Regrettably, to specialize is to marginalize. If it is perceived that environmentally responsive building techniques are elitist and expensive, then our cause is lost.

The concept of "Off the Shelf" was developed to demonstrate that building responsibly is accessible to all people and to all projects, regardless of size or budget. Our mission was to encourage by example. By carefully researching building products and techniques that are readily available to the general public, our project Team was able to create an environmentally responsive building that remained on budget and on schedule. This book is a record of those achievements and a tribute to their dedication.

Building responsibly is not an "all or nothing" deal. While we recognize that the most "green" solution is not always achievable, we can each make a series of small commitments in our building projects that can add up to sizeable environmental response.

Our hope is that this project record will become a guide to empower and encourage every interested party toward building in a manner that is earth friendly. The tools and the techniques are available "off the shelf." We challenge you to add the commitment required to build projects that will set a responsive example for the next 100 years.



David von Oeyen, Director of Design for Langdon Wilson, has over 20 years of experience designing various commercial, institutional and healthcare facilities. David holds a Master of Architecture degree from the University of Michigan. His key work has been honored with more than 15 design awards and has been

published in numerous journals.



Steve Arnold, Project Manager, is a talented and experienced Project Manager who has made major contributions to a broad spectrum of projects with emphasis in the areas of Project Management, Design Implementation and Construction Administration.

Robert Puleo, Interior Design, has more than fifteen years of professional experience in architectural planning, interior design and project management. He is thoroughly experienced in overall space renovation and expansion planning, detailed design development, modular furniture systems analysis and construction administration on large and small projects. Robert holds a Bachelor of Architecture from the University of Arizona, Tuscon, Arizona.

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Alma Brent                                 Bucky Green  
Dave Treece                                 Craig Grable  
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## LANGDON WILSON ARCHITECTS PROJECT TEAM

Paul Thometz, formerly Langdon Wilson Architects  
MHI Structural Engineers  
FBA Electrical Engineers  
T&K Mechanical Engineers  
Sylvan Lighting

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