

This Research Paper is a consensus of research on office systems appropriate to our current project for MC Financial. There is also information regarding programming information on client needs and MC Financial information important to properly designing and meeting all of the needs required.

MC Southern Financial

Research and
Programming

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MC Southern Financial
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MC Southern Financial

Program with Design Considerations

- Lobby/reception area conveying the concept of the firm, conveying the concept of the firm. This space should oversee traffic.
- Coffee bar adjacent to the lobby, including lounge for employees to take a break from their work to socialize with each other
- Waiting area, adjacent to the lobby, should make a lasting first impression on guests
- 2 conference rooms (8 and 24 people) with projector and laptop technology
- Kitchen, does not have to be a separate room, can be included in Lunchroom space
- Lunchroom, should provide a separate feeling from the working areas through the use of a variety of seating and materials
- Small wellness room with comfortable seating and a relaxing environment for private, personal time
- 2 copy/printer stations, should accommodate copiers and minimize the printing noise in the workplace
- Mailroom, adjacent to the Lobby, and will manage incoming and outgoing mail
- Technology room (server and electrical room) near the elevator core, 150 sf, open ceiling to the slab for heat release, no design considerations necessary
- Storage for office supplies, two part room (with open and lockable areas), no design considerations necessary
- Secured filing room and achieves, 200-300 sf, away from public areas and closer to management and employees, no design considerations necessary
- Small secured vault room, away from public areas and closer to management and employees
- General storage 11-200 sf, no design considerations necessary
- Janitorial closet, no design considerations necessary
- Informal meeting areas, located near the benefits, insurance and individual client departments for collaboration
 - To encourage collaboration and teamwork, like furniture can be gathered in social and work zones
- Restrooms, plumbing calculation needed, accessibility needs must be met
- Locked files located near workstations, lockable, one for each employee
- Private offices (8 total):
 - CEO

- CFO
- 1 HR department head
- 5 Executive manager offices
 - 1 exec. for individual clients
 - 2 exec. for benefits packages
 - 2 exec. for insurance
- 132 workstations in total
 - IT person located near the technology room
 - A CEO assistant located near CEO office
 - Accounting Department: 20 workstations located near CFO. CFO's assistant is included in this list.
 - 20 workstations: 75 sf each
 - Human Resources Department: 5 workstations located near the human resources department head. The HR department head's assistant is included in those 5 workstations.
 - 5 workstations: 75 sf each
 - Individual Clients Department: 25 workstations working with the executive manager for individual clients. The executive manager's assistant is included in this list.
 - 20 workstations: 75 sf each
 - 5 workstations: 125-150 sf each, all should be the same sf
 - Benefits Department: 40 workstations working with the two executives for benefits. The executive managers' assistants are included in this list.
 - 32 workstations: 75 sf
 - 8 workstations: 125-150 sf each, all should be the same sf
 - Insurance Department: 40 workstations working with the two executives for insurance. The executive managers' assistants are included in this list.
 - 32 workstations: 75 sf each
 - 8 workstations: 125-150 sf each, all should be the same size
- The assistants are located near the private offices of their bosses. Their workstations is 75-80 sf and all of them should be the same size.

Design Considerations are in Green

MC Southern Financial

Company Profile

- “MC Southern Financial” wants to convey strength, reliability and good communications.
- “MC Southern Financial is located on the 37th floor of the Peachtree Tower.
- Established in 1978, they are a nationwide organization of independent insurance, investment, and executive benefit firms that serves the financial needs of ultra-affluent individuals, corporate executives, entrepreneurs and Fortune 1,000 companies.
- “MC Southern Financial” has 100 member firms in 35 states, and in recent years sales nearly reached approximately \$1 billion.
- An important functional goal to this company is a corporate culture based on teamwork. They have expressed a need for informal meeting areas to encourage interaction and give an alternate environment for the employees.
- “MC Southern Financial” prefers glass walls due to the fact that they help financial clients see exchanges taking place and show the energy of the office. These walls will also provide better views of the city.
- The only completely private space should be the office of the CEO.
- The coffee bar area should encourage interaction so that employees can exchange ideas.
- The lunchroom should give a fresh feel to the office. It will represent an escape from the work related sections of the floor.
- “MC Southern Financial” requests a muted palette with an emphasis on natural, environmentally friendly materials. These materials should primarily come from local vendors. This company fully supports the “Green” initiative.
- The floor will be accommodating 142 employees including:
 - CEO
 - CEO assistant
 - CFO
 - Accounting department: 20 employees, including CFO assistant
 - HR department: 6 employees including the department head and his/her assistant
 - Individual clients department: 26 employees including one executive manager and his/her assistant
 - Benefits department: 42 employees including two executive managers and their assistants

- Insurance department: 42 employees including two executive managers and their assistants
- 2 receptionists
- IT person

MC Southern Financial

Site Information

- 191 Peachtree tower is the fourth tallest skyscraper in downtown Atlanta, Georgia. Standing in at 770 feet.
- Originally designed by Johnson/Burgee Architects but renovated by the Cousins Properties
- Building Size: 1.2 Million SF
- (50 stories), it is also among the tallest 200 buildings in the world. Completed in 1990 by local firm Kendall/Heaton Associates Inc., the building is an icon in the Atlanta skyline with a 360-degree view of the city.
- The tower won the BOMA Building of the Year Award in both 1991 and 1998
- From the main lobby, 25 elevator passenger cars in five separate banks serve the office floors of the towers.
- Two service elevators serve the building. Each passenger car is finished in burnished bronze and panels of marble with stainless steel surrounds.
- Floors sized range from 23,000 to 35,000 square feet of rentable area.
- Most perimeter walls include un-obscured floor-to-ceiling windows.
- European marble is the primary finish used on the exterior as well as interior public spaces. (flame-finished Rosa Dante granite with gray tinted glass)
- A striking feature is the tower's two rooftop crowns - seven full stories of interwoven arches and domes that culminate in a ring of columns that are illuminated at night
- Peachtree tower features a 7 story, 31 meter(102ft) high atrium of retail 15000ft² space which connects to the adjacent 450-room Ritz Carlton Hotel
- Structural Material: composite structure
- Facade Material: Glass/Granite
- Facade System: Curtain Wall
- Architectural Style: Postmodernism
- Ceilings are composed of high density 2'x2' acoustical tiles on a concealed tee grid suspension system.
- Air is continuously circulated through slots around the core and perimeter of each floor, eliminating the need for air grids in the ceiling in open spaces.
- Electrical, communications and electronic/digital service is provided through an access flooring system based on an 8' o/c grid originating at the center of each floor.

- Access flooring is 2'0" from the base slab, and the suspended ceiling is 2'0" from the overhead slab, with 9'0" clear from access flooring finish to suspended ceiling finish (13'0" slab-to-slab).
- A multi-level parking facility is integrated into the tower, with elevators that open directly onto the main lobby.
- MARTA Station & regional express bus accessible within walking distance
- Sustainability: LEED EB Silver, Energy Star
- Security/Fire Protection Systems: Security 24/7; fire safety and sprinkler systems
- Strategic Downtown location
 - Surrounded by Centennial Hill, Centennial Olympic Park area, Luckie Marietta, Fairlie-Poplar, and Hotel District
 - Within walking distance of more than 100 businesses (restaurants, hotels, World of Coca-Cola/GA Aquarium, CNN Center, GA World Congress Center, GA State University, etc.)
 - Less than 1 mile from I-75/I-85; Less than 2 miles from I-20
- Downtown Atlanta Demographics
 - 26K residents
 - Male/Female Ratio = 1.6:1
 - Married (15yrs & Older): 55%
 - Speak English: 77%
 - Speak Spanish: 5%
 - Caucasian: 45%
 - African American: 39%
 - Asian: 12.5%
 - Other: 3.5%
- Services:
 - 191 Cleaners
 - ATM
 - Shoe shine
 - Overnight courier
 - Auto detail
 - Zipcar
 - Security 24/7
 - Reserved Parking Area
- Dining:
 - The Commerce Club
 - Alma Cocina (modern Mexican cuisine)
 - Bistro 191

- The Bean Counter Coffee Bar
- The ATL Grill (Ritz-Carlton)
- Amenities:
 - Resolution Fitness
 - Page One News & Sundries
 - 191 Business & Conference Center
 - Lane Ballroom with 200-guest capacity
 - Multimedia Room with 103-in flat screen TV
 - 7 state-of-the-art private meeting rooms
 - Wine Room to secure personalized wine lockers and convenient TouchDown Rooms designed as office-away-from-office spaces
 - Wi-Fi Hotstop in Lobby Area
- • Kevin R. Cantley (AIA President and CEO): “Today, of our 100 employees fewer than 30 drive to work. All others take transit, walk or bicycle, and they love the change to a lifestyle that supports greater environmental sustainability.” - http://cousinsproperties.com/sites/default/files/191_brochure_oct_2013_web_final.pdf

MC Southern Financial

User Analysis

Employee Analysis

- Employees are stationary and take ownership of their space. Most employees work at a 9am to 5pm pace.
- Being a financial firm, the employees work in a structured environment. Structure is necessary when dealing with the kind of clients that frequent this firm. This is also why the employees seek a variety of social settings. Besides the individual workstations, various options of areas to escape are ideal, be it social or private.
- The employees at MC Southern Financial are experienced financial advisers. Most employees have established a career here. This is not an entry level position corporation.
- Due to the great sense of community and family between coworkers, most employees enjoy their job.
- Employees required an abundance of storage due to their many client files. For confidentiality reason, some files should be able to be locked if necessary.
- Most employees rely on transit, bicycle or walking instead of driving to work, due to the prime location of the Peachtree Tower.
- The medium age of employees ranges from early 30s to late 50s, with the majority of employees falling into the Generation Y age bracket. That being said, the employees on the higher end of the age gap tend to be in positions of power (CEO, CFO, executive managers, etc.)
- The benefits, insurance and individual client departments consult with clients therefore they need ample space for guest chair(s) or should be located in close proximity to a conference room.
- The benefits, insurance and individual client departments work closely together.
- The accounting and human resources departments do not require as much room for collaboration or consultation, compared to the two previous departments. These departments might require more privacy than others.
- The HR department will need ample room to hire and train new employees. This does not have to be achieved at their individual desks.
- The accounting department requires adequate normal for secure storage.
- Both the HR and accounting department work closely together and collaborate often.

- Clients require accessibility, efficient circulation and way finding, codes and regulations, lighting, acoustics, sustainability. Clients also want an attractive, efficient, and healthy environment that responds to user's needs.

MC Southern Financial's Client Analysis

- MC Southern Financial's clientele consists of local major corporations as well as clientele around the nation.
- Typical individual clients of MC Southern Financial range in age from mid-thirties to late seventies.
- Fortune 1,000 companies, corporate executives and entrepreneurs also make up their clientele.
- Over 75% of Fortune 1,000 companies have a presence in Atlanta and many of them lean on MC Southern Financial. Some of these companies include General Electric Capital Corporation, Wells Fargo & Company, PepsiCo, Inc., and Delta Air Lines, Inc.
- Many clients have entrusted MC Southern Financial with their investments, insurance details, and benefits for over 3 decades, while new individuals and corporations emerge regularly.

Journal Article Summaries

Journal Article 1: "Traditional vs. Open Office Design: A Longitudinal Field Study"

To combat the common stance on open office design, this article argues that open offices negatively affect workers' satisfaction and productivity. The study that produced these results was conducted within a large private organization. The purpose of the study was to observe the employees satisfaction with their environment, physical stress, relationships with coworkers, and job performance after being relocated from traditional office spaces to open offices. The employees were surveyed before, during and after the move.

Open offices can be arranged in different ways including "bull pen" (organized rows of desks) and "landscape" (systems furniture with panels of varying heights). Although open offices are unobstructed by many walls, other tactics can be used to divide up the space like plants, screens, storage units and other pieces of furniture. During this study, office spaces were categorized into 5 groups: private closed, private shared, individual open, shared open, and bull pen. (Brennan, Chugh & Kline, 2002) Open offices are not an extremely new idea, achieving great popularity in the early 1970s, but first seen in the 1950s. There are many positives associated with open office design besides the social and mental health reasons; there is also the effect of saving money. Maintaining this kind of space requires less basic maintenance and is less expensive to construct.

Not every study on this subject has produced positive results. Many have reported a decrease in performance, less efficiency, less psychological privacy, fewer opportunities to build friendships, less physical privacy, increased noise, and an increased sense of crowding.

Architectural privacy and psychological privacy are highly related. Man made barriers tend to give a sense of control to the people within the environment. The increased noise level in open office spaces can inhibit private communication, as opposed to the common conception that this office layout increases social interaction.

It is quite likely that the discontent from employees during this observation is simply due to the stress of moving and adjusting to change. If the study were conducted for a longer time after the move, there might be evidence showing a decrease in negativity or no negativity at all. The dissatisfaction that they felt did not recede, which indicates that employees did not adapt to their new environments, but found more sources of distraction and disturbances. Over all, "participants generally preferred privacy over accessibility." (Brennan, Chugh & Kline, 2002)

Some suggestions to combat the negative effects of open office layouts could be to add features that give a small-scale feel. This could be achieved by introducing specific lighting at the workstations, changing the size of the individual work stations, enhancing privacy, and balancing unnecessary noise possibly through material choices and layout. These typical office noises come from coworkers as opposed to office machinery, according to research.

Other suggestions to increase a positive outlook on open offices could include additional break rooms for conversations that require privacy, areas for meetings, and for phone calls. Every open office should follow a protocol of etiquette to encourage respectful behavior towards all, so that everyone can fully enjoy the space. Lack of storage is also a common concern of employees involved in this experiment. Private offices tend to supply more space for various storage needs, while open offices seem to decrease storage. Therefore, storage should

be a serious consideration when designing an open office layout, in the hopes to increase employee positivity.

A limitation of this study was the lack of hard data to compare productivity levels after the move to before the move. The only evidence this study can rely on is the opinions for the employees who chose to participate. There was also no control group to compare this group of employees to. The fact that this was a longitudinal study means that both the immediate and long term results were recorded, making it a fairly well rounded study.

Journal Article Summaries

Journal Article 2: "Exercised Control, Lighting Choices, and Energy Use: An Office Simulation Experiment"

A common perception among psychology and environment-behavior communities is that "perceived control can moderate stress reactions". (Veitch & Newsham, 2000) The study conducted in this article compared the work performance and satisfaction of office employees when placed in various lighting conditions either by choice or by the choice of other. These employees were partnered based on same sex and similar age. One partner had a choice in the type of lighting used in their work space while the second partner had no choice and worked in the environment chosen by their partner. This study only lasted one full work day, which might explain the source behind the results.

Participants in similar studies have also experienced a sense of "overload" when given control over their physical environment. Often when a person is presented with options, they will fear making the wrong decision. This is a limitation of studies such as this one. Often when people know they are participants in a survey, it alters the way they would normally react in a space. Previous lighting conditions (conditions prior to the start of this study) could also affect the opinions of the participants. If conditions were adequate and enjoyable before, it is likely that the employees' opinions alter little after the study, compared to their opinions before.

Giving individuals freedom to make lighting decisions raises the concern of excessive energy use. If people prefer higher lighting levels, it is logical that they would use more energy than necessary. Is the office employee's personal lighting choice going to negatively affect the

business' energy consumption? This is a question worth asking, seeing as office spaces consume a considerable amount of energy. In this particular study, participants consistently chose light levels that were more energy efficient compared to the high lighting options available. This evidence sheds light (no pun intended) on the idea that products can be of high quality and still remain energy efficient. (Veitch & Newsham, 2000)

Participants, across the board, responded in favor of control over their psychological environment in this study. They believed that it contributes to their well-being, although the results show that there was no difference of task performance, mood, satisfaction or physical health between the two groups involved. Perhaps if this study had been longitudinal, the results might reveal a stark difference between the groups. Lighting in the work place is an area that desires more examination since it has not reached a firm conclusion yet.

This experiment used sophisticated controls and dimmable fluorescent lighting, but less expensive and more common options can achieve similar results. Window treatments like blind and curtains, local switches and local illumination versus general lighting are all easily achievable by any work space. The wiring of a space could inhibit these simple solutions, therefore it is imperative to have flexible wiring and furnishing to enhance the psychological environment of employees.

To avoid "learned helplessness", individuals must be instructed in how to achieve optimal working conditions. "Careful lighting and interior design, appropriate training for using new systems, and quick response when problems arise, are essential to avoid negative consequences." (Veitch & Newsham, 2000) People can't be expected to thrive in their work

environments without the proper knowledge and tools. It is our job to equip them and produce spaces where they can not only achieve, but excel, and enjoy their time in their space.

Journal Article Summaries

Journal Article 3: “Effect of Color Schemes and Environmental Sensitivity on Job Satisfaction and Perceived Performance”

Over a four day period, workers performed specific tasks in three differently colored environments. The three spaces were dominantly colored white, blue/green, or red. It has been hypothesized that color may be used to help people feel physically and emotionally more comfortable in their surroundings, and that it may even have the potential to enhance a person’s mood and productivity within their work environment by inducing feelings of comfort, good will, arousal and overall favorable attitudes (Kwallek, Soon, Woodson & Alexander, 2005).

As an ambient stressor, color may have the potential to affect the individual’s functioning at nearly all levels: physiology, motivation, affects, behavior, cognitive and social interactions (Kwallek, Soon, Woodson & Alexander, 2005). The study originally hypothesized that there would be a drastic performance change with all three color schemes. Blue-green scoring the highest, then white, and worse red. The article continues to note the results of other studies. Ainsworth suggested that a warm environment, especially red, stimulates higher anxiety and feelings of arousal, whereas cool colors such as blue tend to elicit lower anxiety and arousability. In another study, their results yielded individuals as experiencing darker spaces as smaller, while light color interiors of comparable size appear more spacious. Even when there were fewer people in the room, the darker room felt more crowded(Kwallek, Soon, Woodson & Alexander, 2005). According to the Brill, Margulis, & Konar study, a predominantly light blue-green office color scheme was selected as a more pleasant, spacious, and productive office

because they were frequently cited as favorites or preferred colors in the BOSTI study(Kwallek, Soon, Woodson & Alexander, 2005).

In this study, blue-green the complimentary color of red rather than blue, allowed for comparison of a cool color (blue-green) against a warm color (red). Office 1 was painted white on all four walls, the desk, back of the door, and all desk accessories. Office 2 was painted red on the two top thirds of the wall area. The bottom one-third was the complement of red, blue-green. Office 3 was a light blue-green on the top two thirds of the wall area with a medium red on the bottom one third. The subjects were matched across the board based on sex and screening ability (Kwallek, Soon, Woodson & Alexander, 2005).

The hypothesis that individuals in the blue-green office would rate perceived performance and job satisfaction more highly than individuals in the bright red office was not supported. However, later in the article, the researchers address the comparison between the white office scoring significantly higher than individuals in the red office but similarly to those made by participants in the blue-green office. The article continues to argue that their findings require further investigation for many reasons. The research was too brief, the responses are subjective, and their decisions may be guided toward the office stigma that everything should be colored in white and beige to be more appropriate (Kwallek, Soon, Woodson & Alexander, 2005).

MC Southern Financial
Office Systems

Literature Review
Hodge and Chandler

Teamwork

Organizations recognize group work is central to success, but struggle to offer effective collaborative spaces, collaborative workplace article (Knoll, 2013). Teamwork is one of the most important elements MC financial wants to achieve. Two elements of collaboration have fundamentally changed, both from the perspective of employees and their organizations. First, employees increasingly desire social connection and engagement as part of their collaborative experience. Second, organizations need both operational excellence - and innovation - to succeed. The workplace is increasingly shifting from a “me” to a “we” work environment in which a wide assortment of technology-rich group spaces are offered (Knoll, 2013).

Organizations need to offer a variety of spaces for increasingly casual exchanges. Office workers no longer lay claim to a small square of real estate but also share ownership of a wide variety of group workspaces (Knoll, 2013). In a research study, researchers found that brainstorming is a large part of the day to day activities in the workplace. Half of all respondents report having brainstorming space as part of their current standard. These areas are usually supplied with display technology, whiteboards, chalkboards, writeable or “tackable” walls, lounge furnishings, specialized and other casual elements to spark creative thinking. The nature of collaboration is making a broad shift towards small, unplanned informal meetings and away from lengthy formal interactions having many participants (Knoll, 2013). Technology must support people’s abilities to connect devices to power and WI-FI, and ultimately, to each other (Knoll, 2013).

One way to bring merit back into the workplace is through implementing fun into the workplace. Use fun activities in informal areas. You can start by maintaining a central gathering spot for food and moments of celebration (Kuske, 2013). Also, it is important to encourage getting up throughout the day. In a recent article published on Entrepreneur.com, turnstone Chief Brand Anthropologist Kevin Kuske said, "Our bodies weren't designed to sit in a 90 degree posture all day. Movement has physical and psychological benefits. An effective workplace has a mixture of spaces and postures. It's about breaking the bond between a user and the desk. (Kuske, 2013). To break this bond, good circulation should be provided to make changing environments easy.

Circulation

Real estate utilization is a key measure that most companies are eager to capture (Wymer, 2010). Offices want to have the most efficiency for their space. Most of this can be achieved through zoning. A better understanding of what real estate is being used, when, helps determine the proper mix of various workspaces in support of multiple work zones (Wymer, 2010). One of the key aspects of getting ambiance and productivity was having natural light and views of the outside ("Movement in the,").

Balancing business unit adjacencies to their occurrence in the business process is demanding more effective zoning of floor plates. Benefits include better circulation and buffering primarily involved in focus work from constant interruption. Zoning should map the work flow as it occurs across the organization (Wymer, 2010). The knoll article continues to describe basic elements to create borders that create storage and divide spaces properly for

good circulation. Number one: for perimeter planning, storage can define space, store reference materials and display objects, while balancing the open and the enclosed in a space efficient manner. Secondly, to identify larger teams, non-architectural work walls speak to a more fluid, agile workspace. Multi-use components the store, divide and display utilize resources more effectively. Thirdly, in small collaborative teams, shared storage reduces the overall footprint and fosters interactions while setting boundaries. Lastly, Knoll suggests if designing for individuals to use an interplay of closed and open planning elements enables workers to stay connected while maintaining a sense of personal space. With frequent interruptions and less privacy the norm in open plan environments, a defined place of refuge is important. It also supports the need to personalize (Wymer, 2010).

Furniture can be arranged to keep horizontal sightlines clear. When shelving is “layered” beneath desk surfaces to create hidden storage space, “your eye doesn’t see all the clutter,” says Vanessa Bradley, advanced applications manager at Steelcase, Grand Rapids, Michigan (Shellenbarger, 2013). Also, when allocating circulation, it is important to consider what kind of traveling the workers will be using? Walking in pairs, carrying papers, and accessibility all needs to be considered for proper circulation. If zoning is properly implemented, than communication between employees will be encouraged.

Communication

Communication can be achieved much in the same way that teamwork can. Communication amongst the workers is encouraged through the same advice that good circulation is achieved as mentioned previously.

New expectations and needs are changing the planning approaches to open environments, most noticeably through the embrace of “low horizons” workstation heights low enough to provide occupants visual access to daylight and other employees within the larger workplace (Wymer, 2010). The contemporary workplace is about connecting employees with one another and their project team (Wymer, 2010). Additionally, employees engage in social activity, an integral part of all work modes and workspaces. As the term implies, social activity provides impromptu connection, linking workers to their colleagues and organization. Individuals spend almost half of their time away from their primary workspace (typically workstations) (Wymer, 2010). People move constantly from focused individual work to impromptu collaborations, a series of planned and unplanned interactions throughout the day (“The next office;”).

The author of “The Next Office: Why CEOs Are Paying Attention” continued to describe a goal called the “best place”. The strategy described the importance of having flexible work spaces that can transition throughout the day. Workers have commented that having more collaborative communication often help them. One particular worker quoted in the article stated that she preferred “Nomadic Camp” style arrangement of furniture, consisting of benches, because sometimes it is just easier to look up and ask a coworker a question that could quickly be answered, versus wasting valuable time trying to find it herself. The open communication can help to improve wellness and productivity in the space.

Sustainability (Indoor Air Quality)

Sustainability is another one of the client's requests to meet. Our intension, as designers, is to create a space that has a sustainability driven core. This section will only cover indoor air quality. Other sections in the research paper will include sustainable approaches. Topics such as lighting, furniture, materials, finishes, and acoustics will all include information as an extension of this category.

In the article "Design Greener, Smarter, Better" indoor air quality is approached as a topic for designers to design a space that is more proficient. Indoor air quality (ASHRAE Standard 62-2001), recommending that outdoor air should be treated to remove contaminants including ozone where EPA outdoor air ozone standards are exceeded (Bernheim, 2008). It is important to understand the correlation between global climate change and indoor building occupant health—a vital connection which clearly indicates human health will decline. That puts the onus on design professionals, who have the ability to design buildings to improve human health. One key action is to improve building design, including selecting appropriate materials and ventilation systems that reduce ozone concentrations within buildings and that reduce the potential for secondary chemical reactions to take place (Bernheim, 2008).

Although building design is discussed in this article, and that is out of our hands, the other half of the design is interior. In our layout, we should capitalize wherever outdoor air quality is acceptable and with the use of day lighting and efficient electric lighting. There are four principles to reducing indoor ozone concentrations and secondary chemical reactions. Source Control is the first principle. Pertaining to designers, we should select indoor materials

that have a low VOC and low-formaldehyde emissions in order to reduce the indoor chemical concentration and to reduce the potential for ozone-generated secondary reactions. Indoor materials should be selected with low embodied energy as verified with formal Life Cycle Assessment (LCA). The LCA data provides information on the energy and water used to: mine the raw materials and manufacture the component materials and final products: transport the product; and recycle the product (Bernheim, 2008). The second and third categories are ventilation design and building and indoor air quality commissioning building, however those categories do not apply to our services.

Building maintenance is a category where interior designer's choices can greatly impact the space. When selecting indoor materials, select those that can be cleaned with low-emitting cleaning agents that are known to have low reactivity with ozone, thus limiting the formation of secondary compounds. Provide adequate ventilation while cleaning indoor spaces, and maintain high ventilation rates for several hours after cleaning. Provide dedicated ventilation to the outdoors for spaces where cleaning products are stored (Bernheim, 2008).

Wellbeing

There are several studies based on the idea that the wellness of the employees directly affects their productivity and of course overall success and happiness. Three sources provide information that can be a catalyst for intentionally designing work environments that support the physical and social environment. In order to cultivate optimism, designers should create spaces that: allow choice and control over where and how people work, create spaces that allow personalization and individual customization, instead of tightly enforced workplace

standards, settings and affordances that help employees feel supported in their work, and designing for transparency so people can be seen and build trust ("Six dimensions of,"). To establish meaning, provide social spaces to reinforce the importance of fun and social interactions and the company's commitment to encourage these behaviors ("Wellbeing thought starters;"). Mindfulness can be made by creating environments that support focus and minimize distractions for all tasks by providing a diverse range of settings that facilitate individual concentration, one on one connection, collaboration and team focus ("Wellbeing thought starters;"). For physical health, a "get up and go" attitude can be aroused by including cafes with healthy food choices, bringing nature in with daylight, views, ventilation, patios, etc, and supporting active, healthy lifestyles with centrally located stairways, outdoor walking paths, bicycle racks, etc ("Six dimensions of,"). Another solution can be including a range of areas that encourage people to sit, stand, and move while supporting the multiple technologies they use ("Six dimensions of,"). Humans have four levels of response to an interior: feelings about it, feelings in it, thoughts about it, and behavior (Nassar). Thinking in the mindset of the user and following the mentioned suggestions will make a happier and healthier workplace.

Indoor Plants

Dr. Leonard Perry, Extension Professor at the University of Vermont has done extensive research on the benefits of indoor plants. What may appear as just a decorative aesthetic is in fact helping the space and the users more than imaginable.

Studies have shown that plants in homes and workplaces help reduce stress, increase productivity, enhance employee attitudes, lower operating costs, help in "green building"

design, and improve air quality. Employees in environments with plants were 12 percent more productive than those not exposed to interior plants. Visual exposure to plants helped to reduce blood pressure, and to lessen stress within five minutes. Surveys and studies have verified the positive effect of plants on employee perception and disposition. They even reduce employee absenteeism by 14 percent! This asset valued at 10 times the building cost and 100 times the energy cost (Perry).

Because of the plant's cooling process, plants can decrease the air temperature in an office as much as ten degrees. Plants cost less than most other choices for corporate décor. Clients and employees perceive interior spaces with plants more welcoming, relaxed, and upscale (Perry). Plants have a positive impact on "sick building syndrome", remove toxins such as formaldehyde, and have a mean reduction of 12 ailments with plants, such as fatigue, sore throat, coughs, and dry skin compared to without which is 23 percent. Firms that use plants indoors extensively include planters on top of filing cabinets to divide space, reduce noise, and to improve employee health and satisfaction.

Color

There is a good deal of controversial information on color in office spaces especially. It ultimately depends on the purpose of the company and what you're hoping to achieve from the users. From a journal article "Effect of color schemes and environmental sensitivity on job satisfaction and perceived performance", results were taken that will help us in our design decisions. Most of our color information can be found in the summary of the article but some facts will be added in this portion of the research paper.

Ainsworth suggested that a warm environment, especially red, stimulates higher anxiety and feelings of arousal, whereas cool colors such as blue tend to elicit lower anxiety and arousability. In another study, their results yielded individuals as experiencing darker spaces as smaller, while light color interiors of comparable size appear more spacious. Even when there were fewer people in the room, the darker room felt more crowded (Kwallek, Soon, Woodson & Alexander, 2005). According to the Brill, Margulis, & Konar study, a predominantly light blue-green office color scheme was selected as a more pleasant, spacious, and productive office because they were frequently cited as favorites or preferred colors in the BOSTI study. Researchers addressed the comparison between the white office scoring significantly higher than individuals in the red office but similarly to those made by participants in the blue-green office (Kwallek, Soon, Woodson & Alexander, 2005).

Lighting

The article "Exercised Control, Lighting Choices, and Energy Use: An Office Simulation Experiment" is summarized earlier in the binder. This section on lighting will focus on lighting for LEED as we are designing for a sustainable environment.

A practical and actionable definition of sustainable lighting is meeting user needs with the least consumption of energy and other resources. User needs include adequate task and ambient illumination, visual comfort, and an interesting environment. How well lighting minimizes the consumption of energy and other resources can be evaluated by certification through LEED- Leadership in Energy and Environmental Design ("Lighting for leed.,"). LEED affects lighting in four areas: sustainable sites, energy, and atmosphere, indoor environmental

quality, and innovation in design, lighting design, in turn, can significantly influence key credits. Descriptions approached are light pollution reduction, fundamental commissioning, minimum energy performance, optimize energy performance, enhanced commissioning, controllability of systems-lighting, daylight and views – daylighting, views, and innovation in design. ("Lighting for leed.,"). Each of the categories mentioned have specific requirements to meet before that category can count towards LEED. For example, Interior lighting quality requires that you meet four of the eight features. One of the feature requirements for this category is using light sources with a CRI of at least 80 for at least 95% of the connected load ("Lighting for leed.,").

Using separate layers of light for local task-oriented illumination and ceiling-mounted ambient illumination – rather than a single, general lighting system – reduces energy, improves the alignment of illuminance to key task areas, and provides for individual control. In the same way, reflecting light off of walls with dedicated luminaires can provide both wall and ambient illumination, balancing surface brightness, and do it more effectively than relying on a single overhead system to do both. In terms of performance, including fluorescent ballast or LED driver – contributes directly to energy efficiency and economical operation ("Lighting for leed.,").

Automatic occupancy sensing and photosensor control provide additional energy savings, while individual controls permit lighting to adjust for different task needs and individual preferences. Occupancy controls turn lighting off when sensors no longer detect the presence of occupants. The control can be linked to a manual switch so lighting is on only when

an occupant turns it on. This is a manual on/auto off device and saves more energy than auto devices ("Lighting for lead.,").

Generation Differences

Generation Y represents a large population group born between 1979 and 1997. As Gen Y becomes a dominant force in the workplace, it might be wise to learn more about what they care about, how they see their work environment, and how these factors might affect business.

For the purpose of our office layout, it is crucial to understand more about this generation. The

employees at MC Southern Financial range in age from low 30s to upper 50s with more numbers on the younger end of the scale. Typically, executive management, CEO and CFO positions are filled by members of the older generations.

The values that this generation holds high are changing the way we see office spaces. One obvious shift in office layouts within the last 50 years is the open office idea. Generation Y'ers value non-traditionalism and doing things differently; they are huge supporters of collaborative work with other co-workers, which has become evident in the growing popularity of open offices. These less constricting workspaces promote the blending of work life with personal life to bring a sense of family to the employees. Various forms of seating arrangements, private and public spaces and panel systems can encourage the different types of social interaction desired in office layouts today.

Although the majority of MC Southern Financial may belong to Generation Y, there are still others to consider. Older generations may resist this open trend because it completely contrasts the traditional design of office spaces. Private offices help give a sense of status, give

more privacy and often provide more room for storage. But these crucial elements of a successful work environment don't have to be sacrificed with an open layout. Later in this paper, ways to achieve and maintain these elements in an open office plan will be addressed.

Bringing together the old and the new will likely bring about positive outcomes like "multi-generational interaction in the workplace and a correspondingly more varied range of opinions, attitudes and personal philosophies". (Harriss & Winstanley) Not only are the inexperienced learning from the experienced, but the employees with age can learn from the youngsters. The flexibility an office position can have today is strikingly different than the structured ways of the past. So long are the days of a "fixed office culture" and the limited use of traditional tools. Generation Y brings a strong sense of individuality to the table and with this comes the desire to determine one's own way to achieve tasks and the time frame to do so. This new way of doing things is catching on and inspiring older generations to give it a chance.

There are many positives that this younger generation brings to the office, one being the new technologies being integrated. We have more freedom and perform more efficiently with innovative technology that takes up less space and can achieve more than equipment of the past. For example, tools that used to be required to display media in a conference room can now be condensed to a small projector attached to the ceiling and a bare wall to capture the projection. Structural elements around us can absorb tasks and devices in order to conserve space. Walls, ceilings and surfaces now have the potential to support "more tactile and organic surroundings designed primarily for the needs of people..." without succumbing to "the spatial demands of traditionally boxed digital equipment." (Harriss & Winstanley)

Another positive would be the growing awareness of the importance of sustainability within this generation. The Peachtree Tower has already made strides in this aspect simply by its prime location. Being in the heart of downtown Atlanta, Peachtree Tower is surrounded by establishments for social interaction. If MC Southern Financial employees want to grab lunch with a client or run errands on their break, there are over 100 options in walking distance from the office. Working from home part-time also promotes cleaner air and the conservation of resources.

Besides the easy access to the office and a neighborhood of activities close by, Generation Y maintains other office environment values. This wave of employees want to work in an attractive space. "Young workers judge companies by the "look" of their workspace and by the respect shown to employees via the physical elements and the equipment provided." ("Supporting generation y," 2010) The Peachtree Tower provides many services that relate to these values as well. Amenities like places to eat, workout areas, dry cleaning, and auto detailing also appeal to this generation's set of values. Safety is a common concern and many companies are taking measures to combat theft and personal harm to employees. Peachtree Tower provides 24/7 security, fire safety and sprinkler systems to promote a sense of peace in the office.

The Knoll article "Supporting Generation Y at Work: Implications for Business" lists various workspace characteristics that this generation finds significant. These include ergonomic and comfortable work stations that supply ample storage, access to natural light through windows or clear sight lines to the outdoors, state of the art technologies for personal

work and video conferencing, attractive furnishings and well thought out layouts of workstations. The ability to personalize one's work station through the display of personal items is also crucial. Flexible work tools that allow employees to adjust their seating, monitor arm, keyboard support and task lighting help personalize a space as well.

So if we do things the Gen Y way, what will this mean for business? Due to the knowledge based society that is forming in the workplace, Generation Y tends to have an expectation of high compensation. They see their skill set as priceless due to their advanced schooling and formal training and account for one third of the US workforce according to the article "Capture It". This generation should not be written off as know-it-alls though; they also are constantly seeking to further their career opportunities. Organizations should provide the chance for employees to do challenging and creative work to grow as professionals.

Employees at MC Southern Financial are diverse and have various wants and needs. Every person in the office will have different physical and mental abilities. Our job is to design this space so that it gives everyone an opportunity to thrive, regardless of age or station. This section discussed values held by the Generation Y population in the workplace and what those values mean for business at large. In the next section we will dissect one of these values specifically; the ergonomics of a workspace.

Ergonomics

There are two traditional approaches when it comes to the study of ergonomics. One is the engineering side which focuses on physical capabilities (or anthropometrics) and body size. The other is the cognitive part, which works to find the tie between technology, job design, and

mental capabilities. The first focuses mostly on the body mechanics of work, and does not include the mental part of work. The latter focuses on the mental work load and does not consider the physical parts of work. In order to get a more realistic view of office ergonomics, one must have a holistic view; combining not only the physical and mental elements, but the social aspects of the work environment as well. These social issues could include informal and formal collaboration, learning and mentoring, and group productivity. Layout related issues like planning and furnishing of individual and group spaces and their adjacencies, and the scale of interior work environments are other social issues to consider. (O'Neill & Albin, 2011)

New and important ergonomic considerations for the design of a work space include activities related to collaboration. According to the Knoll article, "Holistic Ergonomics for the Evolving Nature of Work", "collaboration work now involves a constant shifting of attention and, thus, is more visually interactive, with the eyes and physical orientation of the body frequently moving between coworkers and other objects involved in the task." Many departments at MC Southern Financial require adequate space for collaboration and space for meeting with clients. This requires a layout and furniture conducive to a holistic approach to design involving the mental, physical and social aspects of the office.

Studies have proven that paying attention to ergonomic needs can decrease musculoskeletal injuries and absenteeism rates. (Johnson & Kim) "Poor physical and mental health cost employers' millions of dollars every year." (Johnson & Kim) So it seems that the wisest decision a business can make is to take measures to increase ergonomic value in their offices. This will keep the employees healthier longer, and increase productivity, therefore

increasing profit instead of costing the company money due to health related injuries.

Designers should specify furnishings and technology that can be adjusted or moved by the employee to attain desirable and physically ergonomic spaces. These specifications should be flexible to support the employee during postural changes without requiring the user to adjust controls. (O'Neill & Albin, 2011)

To optimize the social aspects of holistic ergonomics, the designer could reduce the horizon height of walls and furnishings to increase slight lines, yet providing the right variety of heights to support various work zones. As more the mental sector of ergonomics, the designer should improve the employee's control over their work space. These individual spaces should be adjustable by possibly using free standing furniture. The next section will dive into the furniture necessary to achieve this productive and enjoyable work environment we've been describing; furniture that supports our ergonomic needs.

Furniture

There are many "standards" when it comes to office furniture, but this shouldn't limit the designer when specifying pieces. Typical pieces include casegoods, filing, panel systems, tables, seating, shelving, custom furniture, accessories, and equipment. Furniture pieces that supply storage are critical in an open office space. Vertical files are rarely specified today, but businesses that are 15 to 20 years old or more still rely on them. (Bakker, 2012) Lateral files are most commonly specified for new construction.

Panel systems come in many shapes, sizes and finishes. MC Southern Financial has many departments, all with different needs. Some departments require space for collaboration,

others need a meeting space for clients and some departments need more privacy. Each Steelcase panel system line offers something new to the layout of an office space. Answer, Kick and Montage panel systems all provide various desirable qualities like easy collaboration between a few team members, using little room per individual, and giving a higher-end feel. The look and layout of a panel system can say a lot about a business and can highly affect the employees within.

Decking systems such as Answer Freestanding, Post and Beam, and Ellipse offer characteristics like flexibility, clusters of two employees, and sophisticated finishes. Tables can be utilized in open areas to provide a touchdown zone for quick collaboration. Seating should reflect the position of the employee as well as remain adjustable and comfortable for the various tasks each employee might perform throughout the day. When hard flooring is used, chairs with soft casters should be used, while on soft flooring, hard casters should be used. (Bakker, 2012) Sofas are seldom used in an office space and guest and lounge seating can be anything the client and designer agreed on.

Finishes and Materials

Peachtree Tower, being a LEED certified building, encourages a green initiative. MC Southern Financial will follow suit by hosting architectural, decorative and functional elements that create little impact on our environment. Finishes applied to these specifications, and the materials used to create them, should be taken under careful consideration by the designer. According to Sustainable Commercial Interiors, there are a few guidelines a designer can use to narrow the search. Some of these include: low or no VOC content, considering total life cost,

high recycled material content, and materials with naturally renewable resources. "Rapidly renewable materials in office furniture are not very common but that is changing as manufacturers adjust to meet LEED." (Luly, 2008) MC Southern Financial will be a contributing member in this office revolution towards a more eco-friendly workplace.

Every surface in a space has the potential to host a "green" product. In regards to flooring, carpet has come a long way in becoming more sustainable. Not only is carpet made of recyclable material but it can be converted into other materials for future use. Interface has a collection of carpet known as the i2; carpet tiles are never organized in a perfect layout so that if one needs to be replaced, the new tile will fit right in without notice and with little installation cost. Wolf-Gordon Inc. offers an Ecological Reclamation Program for its EarthSafe Strata Collection of wallcoverings which awards credit for returned materials after their usable life. Strata products are made up of natural, renewable and recyclable materials and harvested from managed forests.

Chicago Metallic product line EuroStone provides ceiling panels made of inorganic material to combat the growth of mold, mildew and fungus; IAQ will not be threatened. (Riggs, 2008) With the abundance of glass walls used in office spaces, UltraGlas Inc. offers float glass that has a minimum of 15 to 30 percent recycled glass. Kliptech Composites has a line made of 100 percent postconsumer recycled paper named PaperStone. PaperStone can be used for solid surfaces and is water safe. Certain procedures should be taken when furniture is introduced into a space so that it can release VOCs (offgassing). Eco Intelligent Polyester (ELP) fabrics are designed for office seating and panels. These fabrics mimic polyester in aesthetics and

performance but are made from fibers that replace a carcinogen that is known to cause bronchitis and emphysema.

There are nearly endless possibilities of finishes and materials to choose for the various surfaces in an office. With the popularity of "going green" and the increase in education on the subject, ecofriendly manufacturers have multiplied and have expanded to everything from textiles to flooring to ceiling treatment. Finishes can also affect acoustics, either negatively or positively. The next section will address this issue.

Noise Control and Acoustics

Acoustics are extremely important in an office space. Confidential information is often discussed, board meetings are held, presentations are made, concentration is needed and privacy is crucial. Increased noise is the most common complaint in open office spaces. To combat this issue, MC Southern Financial could do a number of things. One of these could involve the use of Vertical Intelligent Architecture (VIA) wall systems to support large-scale video and display technology. These panels offer acoustical privacy and are flexible for reconfiguration. (Makovsky, 2013) Suspended acoustical clouds with upholstered fabric not only reduce unwanted noise but help create intimacy in small gathering spaces.

Besides ceiling and wall treatments, furniture and surface materials can also attribute to positive acoustics. The shape of a chair or a panel system can affect acoustics as well. Arranging furniture in a way that supplies different areas for interaction can reduce noise. If employees have separate places to have private conversations and places for collaboration, the noise from one space won't leak to another. As proven in the article "Traditional vs. Open Office Design: A

Longitudinal Field Study", perceived privacy and actual physical privacy are related but can vary greatly. Perceived privacy can supply the desired reactions from employees without the physical barriers supplied by actual privacy. Noise is still a concern, but in spaces that are perceived as private, employees will not feel the need to speak louder and overcompensate for the expected noise in open office systems. The following section will discuss these types of privacy and how they can be achieved.

Privacy Concerns

The layout of an office space is really based on manipulation. If we create the *sense* of privacy, employees will be just as satisfied as they would be with floor to ceiling walls.

According to "In the Open, How Design Can Protect Privacy - Expert Insights", there are four broad areas that interior designers can focus attention to protect privacy in the workplace.

These are through space planning, furniture layout, surfaces, and sound masking systems.

Space planning can be achieved by creating separate meeting areas, *for* themselves and *from* others. Furniture can be used to provide physical privacy, either through panel systems or seating arrangements. Ceiling treatments and flooring transitions are a few surfaces that can indicate a change in areas to create privacy. Sound masking systems electronically produce background sound that is not extremely noticeable but loud enough to disguise nearby conversations.

Using glass front for private offices and conference rooms has become a popular trend. It allows natural lighting in, gives a sense of privacy from the rest of the office, yet does not provide complete privacy. Storage is also a concern of employees on the basis of privacy. Some

departments required secure filing systems and this information demands space. Storage space can be seen as a status symbol in the office, especially with the increase in open office layouts. Space is precious and desirable. Many of the topics in this paper have touched on different workplace trends. The next sections will go into more detail about common trends in office spaces today.

Workplace Trends

The organization of work environments has been evolving greatly over the last 60 years. Lately, "alternative workplace" programs have been integrated that include nontraditional work practices, settings and locations. These emerging workplace trends don't generally affect the workplace directly, but affect the way we work. (Ouye, 2011) One trend refers to the increasing distribution of tasks in a workplace. No longer are organizations limited to one building; people within an office can be employees, freelancers, customers, and suppliers, without the restriction of the building itself. The advancement of videoconferencing abilities, presentation tools, and the sharing of knowledge lead us to the next trend. Technology enables our ability to collaborate and share formal knowledge, but does not contribute to employees getting to know each other on a personal level.

With the Boomers reaching retirement age, Generation Y is stepping up and bringing a distinctive work style to the office. This trend brings its share of concerns, one being that Generation Y will not be able to fully replace the Boomer workforce. One important work aspect that is crucial for this up-and-coming generation is work flexibility. This trend refers to the ability to choose how, when and where one works. Sustainability is the buzz word of the

day and its practices contribute to a fast growing trend in office spaces. Corporations have answered this request by reducing energy consumption, reducing emissions, revising product design, addressed operational management, and recycling.

A common trending request in the office is for individual control over factors that impact personal comfort. (IBM Research Division, 2001) The more ownership an employee has over their environment, they more comfortable they will be. This is turn will lead to higher productivity and less stress. This is a small list of workplace trends, but there are many more and they increase often. Every topic discussed in this research paper related to a trend in the workplace.

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