



Architectural Breadth – Interior Tenant Fit Out

Introduction

Problem/Opportunity Statement

This technical analysis will design a fit out for the future tenant; WeatherBug®, which has decided to lease the entire building. This is a great opportunity to design a space according to the clients wants and needs. This breadth also has the opportunity to stick with the sustainable aspect by using LEED for Commercial Interiors.

Goal

Since WeatherBug® is leasing the entire building; the goal of this analysis is to design a space that accommodates high performance green aspects. It is hard to achieve a LEED rating when designing a space only; however ideas from LEED for Commercial Interiors will be utilized. A cost comparison for this design versus non-energy efficient design will also be estimated. The entire design is intended to be incorporated into the construction of the building.

Research Steps

1. Interview a WeatherBug® representative to gain knowledge of what areas they would like to have in the selected space.
2. Review LEED criteria and decide which ideas I feel are obtainable.
3. Design rough layout and flow of space.
4. Receive input from client.
5. Make necessary changes upon feedback.
6. Review architectural design and high performance elements, to ensure documents coincide. This will provide a more finalized list of anticipated LEED points.
7. Choose materials and if needed, create a set of LEED specifications.
8. Incorporate interior design schedule into overall building schedule.
9. Perform a cost estimate.

Expected Outcomes

It is expected that high performance green elements will be integrated into the tenant design based on LEED for Commercial Interiors.



Space Requirements

After interviewing a WeatherBug[®] representative, I had a better insight on what they wanted for their space. The space I was to design is for their Learning Center, which is to be located on the second floor. The following requirements are as follows:

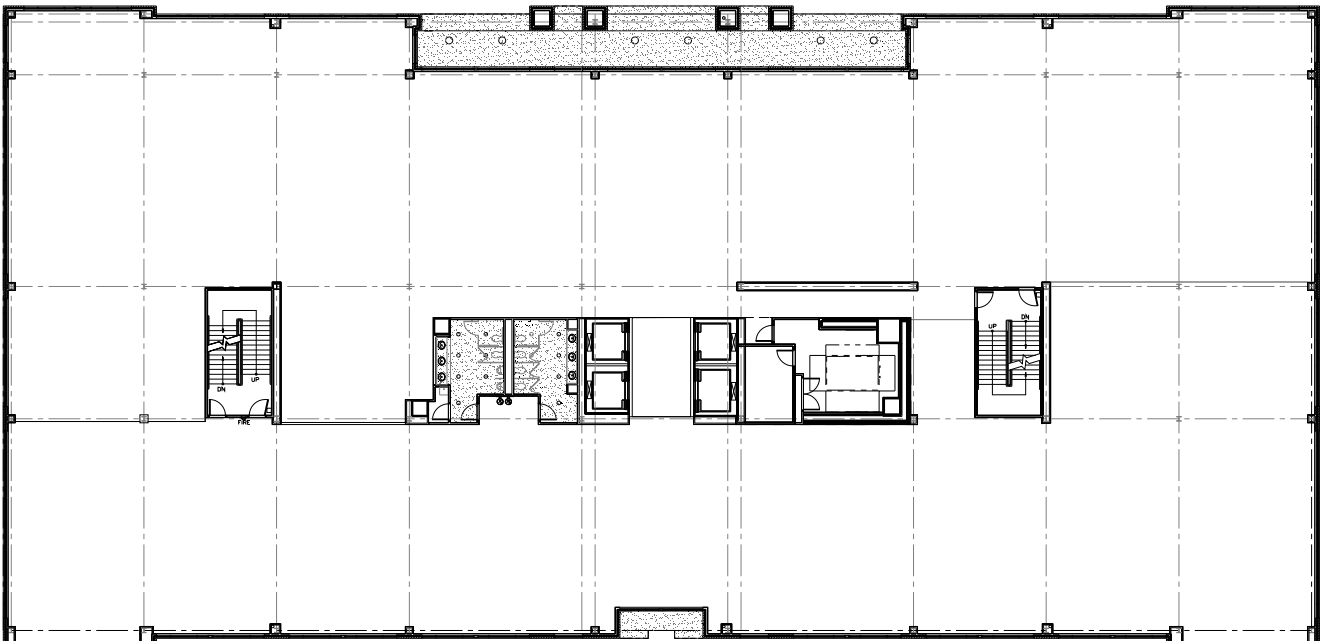
- 6500-7000 SF
- 2 Classrooms
- 2 Conference Rooms (large and small)
- 6 Offices
- 16 Cubicles
- Copy/File/Fax
- Lounge
- Reception Area

Since Milestone Building #4 is a LEED Silver Core and Shell building, I decided to incorporate sustainability ideas into the tenant design. LEED Commercial Interiors ideas were included in the design and material selection. I focused primarily on credit MR3 Recycled Content and MR5 Local/Regional Materials when specifying products and materials.

Tenant Design

Base Building Plan

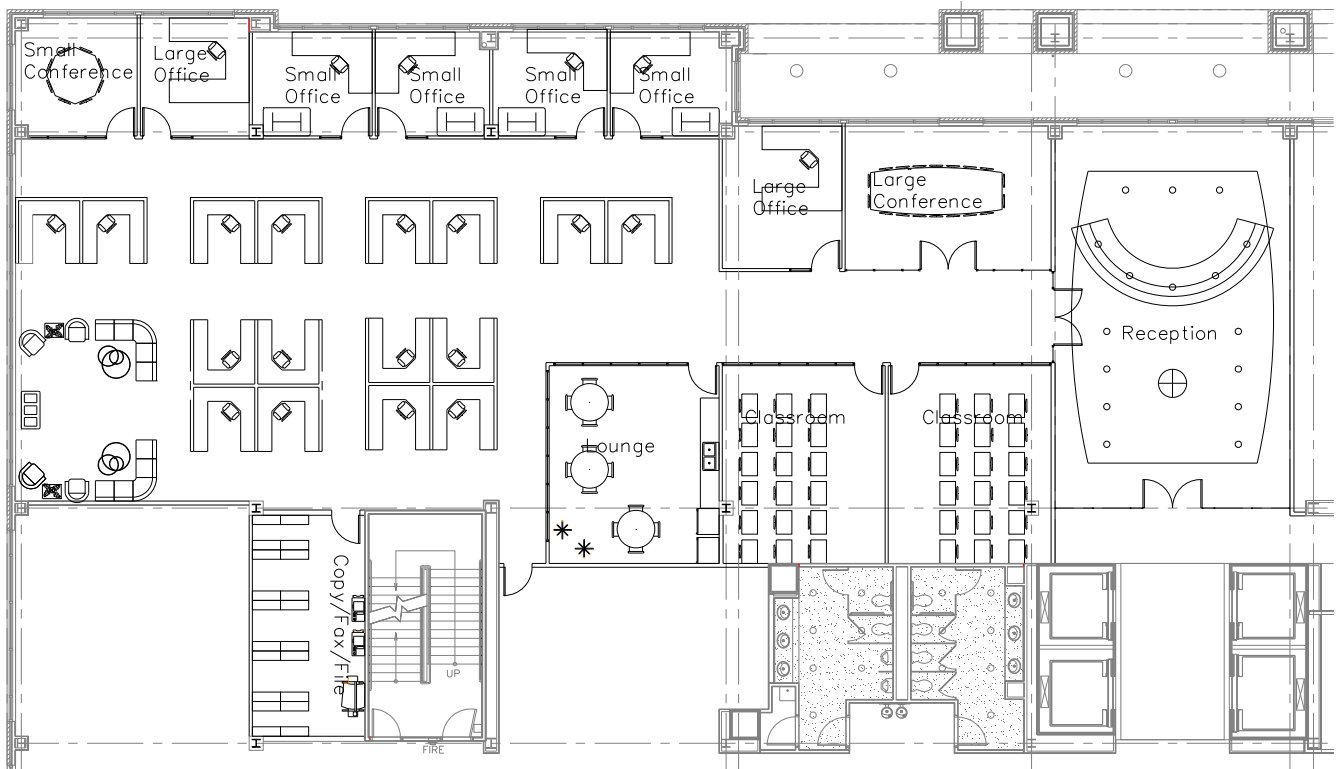
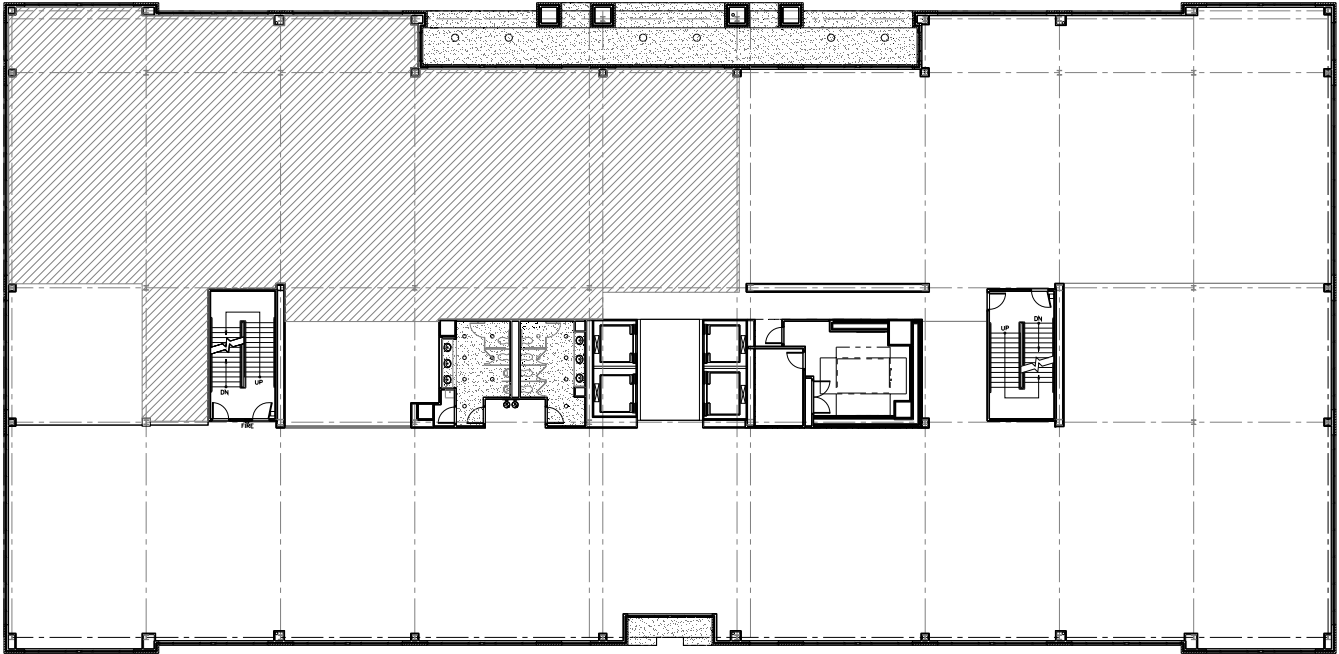
The figure below shows the base building floor plan.





Tenant Fit Out Design

The shaded area shows where the Learning Center will be located on the second floor and the tenant fit out design is shown in the following figure.



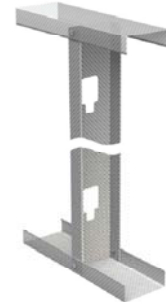


Material List

The materials were primarily chosen because of recycled content, harvested, extracted and manufactured locally, energy efficient and have low or no VOC in adhesives and sealants. The following is a list of materials specified for the tenant fit out.

Framing:

Dietrich products contain a high percentage of recycled steel comprised of both post consumer and pre consumer recycled content. Dietrich Metal Framing also is manufactured and contains material sources within 500 miles of the project site. Scrap metal can easily be recycled on the job site.



Millwork:

GreenTech Cabinetry provides a Bamboo Series, which is considered to be a non-toxic rapidly renewable resource. All materials are extracted harvested and manufactured in Gaithersburg, Maryland, located within the 500 mile radius required for LEED MR5.

Doors:

Eggers Industry provides flush doors, frames and a silhouette series that is an FSC (Forest Stewardship Council) chain of custody certified supplier. Eggers’ UV cured finishing system consists of water based stains and clear coats that are VOC free.

EGGERS FLUSH DOORS** LEED Categories and Credit Classifications	PC-5 Agrifiber Core	PC-5 Standard PB Core	PC-5 UFF PB	PC-5 FSC UFF PB	SLC-5 Certified Stave Core	SCLC-5 Structural Composite	MC-5 Mineral Core
Credit MR #4: Recycled Content*	2	2	2	2	0	0	0
Credit MR #6.0: Rapidly Renewable Materials	1	0	0	0	0	0	0
Credit MR #7.0: Certified Wood	0	0	0	1	1	0	0
Credit EQ #4.4: Composite wood, agrifiber and adhesives contain no added urea-formaldehyde***	1	0	1	1	1	1	1
Total points possible with Eggers Flush Doors	4	2	3	4	2	1	1

Windows:

As a GreenSeal product, PPG provides interior and exterior window. For the tenant design interior window will be used. PPG uses 20% post industrial recycled glass, low VOC sealants and is considered a local product.



Gypsum Wall Board:

National Gypsum offers products that are local to the site and made of 100% recycled content. The figure outlines these findings.

Plant Locations	Post-Consumer MR Credit 4.1 %	Post-Industrial Pre-Consumer MR Credit 4.2 %	Total Recycled Content %	Material Extraction to Plant Miles	Raw Material Extraction Location
GYPSON WALLBOARD PLANTS					
Apollo Beach, FL	5	95	100	1	Tampa Electric Co., Tampa, FL
Baltimore, MD	5	3	8	Over 500	Halifax, Nova Scotia
Burlington, NJ	5	6	11	Over 500	Halifax, Nova Scotia
Fort Dodge, IA	5	4	9	8	Fort Dodge, IA
Long Beach, CA	5	3	8	Over 500	San Marcos, Mexico
Lorain, OH	5	6	11	296	National City, MI
Medicine Lodge, KS	5	3	8	20	Sun City, KS
Mt. Holly, NC	5	95	100	16	Duke Energy Corp., Charlotte, NC
National City, MI	5	3	8	5	Tawas, MI
Phoenix, AZ	5	3	8	102	Winkelman, AZ
Portsmouth, NH	5	3	8	376	Halifax, Nova Scotia
Rensselaer, NY	5	3	8	Over 500	Halifax, Nova Scotia
Richmond, CA	5	6	11	Over 500	Santa Rosalia, Mexico
Rotan, TX	5	3	8	13	Rotan, TX
Savannah, GA	5	3	11	Over 500	Halifax, Nova Scotia
Shippingport, PA	5	95	100	1	First Energy Corp., Shippingport, PA
Shoals, IN	5	11	16	0	Shoals, IN
Tampa, FL	5	3	8	Over 500	Halifax, Nova Scotia
Waukegan, IL	9	13	22	412	Tawas, MI

Stone and Ceramic Tile:

EcoTop is composed of FSC certified bamboo fiber (a rapidly renewable resource) and recycled wood fiber (salvaged from demolition sites).



These fibers are bound together with a VOC and petroleum free resin. EnvrioGLAS is comprised of 100% recycled glass which totals 80% of the weight. EnviroGLAS is a local material, with



little or no VOC and can contribute to MR2 Construction Waste Management.

Acoustical Ceiling Tile:

Armstrong's acoustical ceiling tile contributes to EA1 by reducing connected lighter power density. Armstrong also uses 23%-87% recycled content in acoustical ceiling tile and both the tile and suspension systems are manufactured locally.



	CHPS Section 01350	Green Label	Green Label Plus
Chain of Custody / Sample Validation		✓	✓
Test for "Chemicals of Concern"	✓	limited	✓
Annual Testing		✓	✓
Annual Testing for "Chemicals of Concern"			✓
Quarterly Testing for TVOC		✓	✓
Tested Against the Most Stringent Criteria			✓
Certified Laboratory Required		✓	✓
Reproducible Protocols		✓	✓
Annual Audit of Laboratory		✓	✓
Oversight by Scientific Review Board			✓
Bottom line:		✓	✓
Assurance specification = delivered			

Flooring:

Lee's flooring offers modular carpets that are CRI Green Label Plus certified. This improves the indoor air quality by limiting the amount of VOC used. Also these products use 16% pre consumer recycled content and 10% post consumer recycled content.



Construction Management | Dr. Riley | Germantown, Maryland | April 9, 2008

Wallcoverings:

Carnegie Fabrics' Surface IQ wallcoverings are GreenSpec certified, a local material and VOC and PVC free. Carnegie uses 100% recycled polyester to avoid the need to manufacture from virgin materials, saving energy and reducing waste.

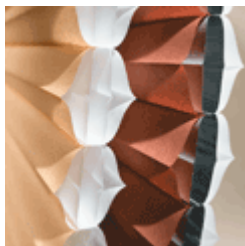


Paints:

Benjamin Moore offers Eco Spec; a paint that caters to indoor air quality. This product does not have the odor of conventional paints and contains no VOCs.

Furniture:

National provides a series of products that increase the use of sustainable materials by reducing solid waste by 87%. The furniture line is GREENGUARD certified that aids in improving the indoor air quality. National furniture is also considered a local product.



Blinds:

Architella Duette Honeycomb Shades by Hunter Douglas are highly energy efficient due to their unique construction; heat in the summer and cold in the winter are captured in honeycombs. These shades are also manufactured locally.

Lighting:

Seagull Lighting provides many Energy Star products in recessed, pendants, sconces and track lighting. Energy Star products use ¼ of the energy as traditional lighting; this in turn saves money on energy bills and bulb replacements. A typical energy bulb lasts approximately 10,000 hours.





Conclusion

To conclude, design is a large aspect of an energy efficient and environmental friendly space. The tenant space for WeatherBug® was designed keeping sustainable ideas in mind, while choosing sustainable materials. Even though an estimate wasn't performed on the interior space of Milestone Building #4, it has been found that applying LEED credits and sustainable ideas into the design and construction of any project has an upfront cost that is about 10% more expensive. The lifecycle costs, however, show a substantial savings. Going beyond the price, sustainable buildings are energy efficient, environmentally friendly and provide a healthier work environment.