

## EXECUTIVE SUMMARY

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The Hotel Felix is an upscale boutique hotel that wants to have a luxurious, sustainable and trendy image. The lighting design needs to engage with the community, patrons and the architecture in order to create the desired atmosphere. Spring work will include a lighting depth, MAE supplemental study, Honors supplemental study, architectural breadth, mechanical breadth and an electrical depth.

The lighting depth will include lighting design solutions for the following spaces.

- North and East Exterior Facades
- Entrance Lobby
- Bar
- Conference Room

The Honors supplemental study will involve redesigning the restaurant lighting as a fifth space while incorporating all the other depth and breadth topics into one cohesive architectural design.

The MAE supplemental study will use what I learned in AE 561, Color Science, to evaluate the appropriateness of using non-white light in a restaurant setting that requires very high color rendering. I will sum the radiant power of two different light sources, most likely incandescent and LED, and calculate the CRI of the corresponding mixed light source. This study will compare various colors and intensities to determine the maximum amount of colored light that can trespass into dining areas. In short, I will use my knowledge of color perception to analyze the color rendering quality of my design.

The architectural breadth will focus on redesigning the restaurant's architecture. It will be inspired by the lighting concepts already developed and should connect the façade and lobby lighting designs. The restaurant will work with the lighting design of the other spaces to present the luxurious, sustainable and trendy image of the Hotel Felix.

The mechanical breadth will focus on redesigning the mechanical system for the lobby. It should fit with the architectural concepts laid out in the architectural breadth.

The Electrical depth will include new branch circuit wiring for all new lighting designs, a short circuit calculation, an inverter vs. generator study and a new electrical distribution system for the redesigned restaurant.

# TABLE OF CONTENTS

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BUILDING OVERVIEW.....	1
DEPTH PROPOSAL - LIGHTING.....	3
CONCEPT.....	3
EXTERIOR FACADE.....	4
LOBBY.....	4
BAR.....	4
CONFERENCE ROOM.....	5
LUTRON PRESENTATION FEEDBACK.....	6
MAE / HONORS SUPPLEMENTAL STUDY.....	8
BREADTH PROPOSAL #1 – ARCHITECTURAL.....	8
BREADTH PROPOSAL #2 – MECHANICAL.....	9
DEPTH PROPOSAL - ELECTRICAL.....	9
DESCRIPTION OF SPACES.....	9
SHORT CIRCUIT ANALYSIS .....	10
DEPTH TOPIC #1 - INVERTER VS. GENERATOR.....	10
DEPTH TOPIC #2 – DESIGN OF RESTAURANT ELECTRICAL DISTRIBUTION SYSTEM.....	10
SCHEDULE.....	11

# BUILDING OVERVIEW

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## DESCRIPTION

The Hotel Felix was constructed in 1926 by Chicago-based architectural firm Levy and Klein and received a full renovation in 2009. It has a historical brick façade with terrazzo ornamentation that contrasts the more modern style of its interior. A unique lobby, spa, exercise room, bar, restaurant and several conference rooms complement its 225 guest rooms. It is the first LEED silver certified hotel in Chicago and it follows many sustainable operating practices. Literature describing the Hotel Felix portrays the image of a luxurious, green, and engaging hotel that is geared towards young professionals. The scope of this project will include the façade, lobby, bar, 1<sup>st</sup> floor conference room and the restaurant.

## BUILDING INFORMATION

**Building Name:** Hotel Felix

**Location and Site:** 111 West Huron St. Chicago IL, 60654

**Building Occupant Name:** DACCORD Group

**Occupancy or function types:** Single Room Occupancy Hotel

**Size:** 85,700 ft<sup>2</sup>

**Number of Stories Above Grade:** 12

### Primary Project Team:

Owner:	Daccord Group	<a href="http://www.daccordgroup.com/">http://www.daccordgroup.com/</a>
Architect:	Cubellis	– no longer operational
General Contractor:	Pepper Construction	<a href="http://www.pepperconstruction.com/">http://www.pepperconstruction.com/</a>
Lighting Design	Schuler Shook	<a href="http://www.schulershook.com/">http://www.schulershook.com/</a>
MEP	WMA	<a href="http://www.wmace.com/">http://www.wmace.com/</a>
Structural Engineers	TGRWA	<a href="http://www.tgrwa.com/profile/index.html">http://www.tgrwa.com/profile/index.html</a>
Interiors	Gettys	<a href="http://www.gettys.com/">http://www.gettys.com/</a>

**Dates of Construction:** 9/28/07 – March 09

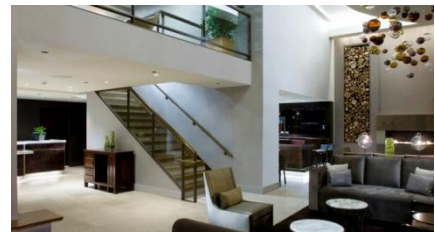
**Actual Cost:** \$28 Million – overall project cost

**Project Delivery Method:** Design-Bid-Build

### Overview of Existing Lighting:

In general, halogen fixtures are used in the front of house areas while fluorescent fixtures are used in hallways, bathrooms and back of house areas. Metal halide and LED sources are used to decoratively light the façade. LED coves surround the lobby and bar areas. Almost all general illumination fixtures are recessed cylindrical downlights. All fixtures have low profiles or are hidden entirely. The existing design is clean, directional and inefficient.

## IMAGES OF THE HOTEL FELIX

*Figure 1.1: North and East Façade Elevation**Figure 1.2: Location in Chicago**Figure 1.3: Front Desk**Figure 1.4: Lobby**Figure 1.5: Lobby and Bar*

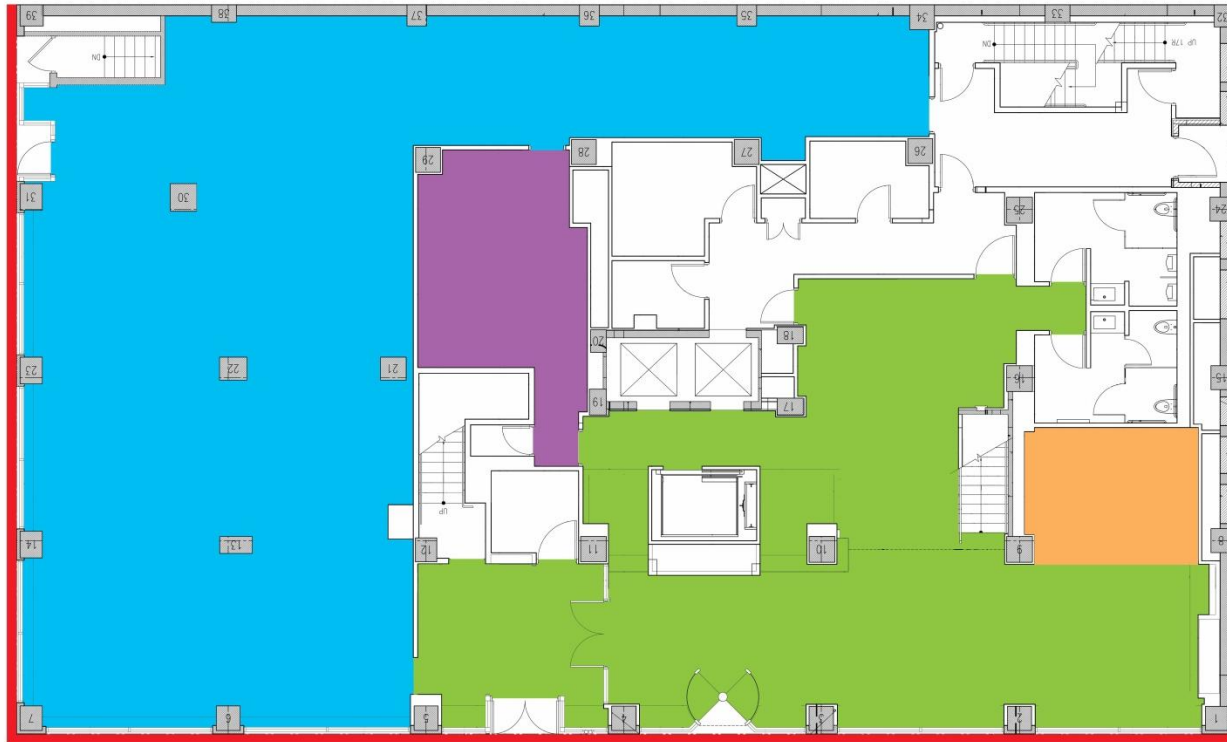


Figure 1.6: Proposal Scope - Façade (red), Lobby (green), Bar (orange), Conference Room (purple), Restaurant (blue)

## DEPTH PROPOSAL - LIGHTING

### OVERVIEW

My lighting depth will focus on the re-design of the façade, lobby, bar, conference room and restaurant lighting systems. The designs will enhance the character and atmosphere of the Hotel Felix while providing the appropriate illuminance levels. The designs will be as sustainable as possible.

### CONCEPT

The Hotel Felix is a luxurious, sustainable and trendy hotel that has a specific character and style. The marketing literature suggests that the Hotel wants to have an edge that sets it apart from other hotels in the region. After combing through the many adjectives used to describe what the Hotel Felix is supposed to be, it became clear that more work needed to be done to achieve some of the claims. In particular, the Hotel fell short of the “inspiring,” “enriching,” and “unexpected” atmosphere depicted on the Hotels website.

In order to create the image and environment desired by the Hotels owners, the lighting design must enhance the strong architectural components of the Hotel while maintaining a luxurious and sustainable facility. To do this the lighting should engage the city, the patron, and the materials of the building. A dynamic and interactive lighting design can capture the energy and diversity present in the

many individuals who visit the hotel every day. By doing something a little more risky with its lighting, the Hotel Felix presents an image of a trendy hotel on the cutting edge of architectural expression while creating an enriching environment for its guests. This will set it apart from competing hotels in the area and enhance the experience of its guests.

## NORTH AND EAST EXTERIOR FACADES

The historical brick and terrazzo façade of the Hotel Felix needs to advertise the appropriate image of the hotel. By engaging the community with an interactive lighting design, the façade can create a presence in the city and advertise the Hotel Felix as a prominent and trendy place to stay. One way to do this is to have the façade react to the changing streetscape. Another is to advertise a local charity and have the façade react when individuals donate. The final design should create a recognizable façade that engages the community.

A grazing scheme that captures the texture of the ornamentation while reducing overall energy consumption and light trespass will be both dramatic and sustainable. The interactive component should focus on the street level instead of the body of the façade because this will impact the community without disturbing guests. The main façade lighting devices will most likely be metal halide accent lights and LED strip lights. The interactive component will have to be highly controllable, and thus will most likely be LED.

## LOBBY

The lobby is the main common area in the hotel and contains dramatic elements such as a hanging sculpture of amber glass orbs, a sleek fireplace, a wood sculpture, pools of water, a white stone wall and many pieces of artwork. The lighting design needs to pull all of these elements together into one composition that supports the character of the Hotel Felix. The best way to do this is to engage the patrons through the materials themselves. By connecting the patrons to the architectural elements already in place, the lobby will become more personable and comfortable.

The main gesture of my proposed lighting design will use LEDs embedded in the glass orb sculpture to literally engage the patrons. They will slowly fade in and out at a speed that depends on the noise level in the lobby. As more people flow through the lobby the sculpture will react and flow more quickly. This interactive element will not change fast enough to be distracting. It will be designed to look luxurious, not gaudy. This design will make the sculpture more prominent and will add an edge to the lobby that reflects favorably on the character of the Hotel Felix. The other elements will be accented according to a hierarchy of brightness so as to avoid cluttering the space. A single composition will emerge with the sculpture as the main decorative element. This hierarchy will support the circulation through the lobby by making the most important areas, such as the reception desk and stairs, more noticeable. All of the lighting in the lobby needs to be very flexible to accommodate dimming. The final design must be luxurious, sustainable and engaging because it represents the entire hotel.

## BAR

The bar is a small single-story space connected to the lobby near the fireplace. It has a bar and three small tables. The effect of the bar lighting on the nearby lobby must be taken into account. The



two designs should not compete with each other. The main goal of the proposed design is to encourage interaction between patrons who are visiting the bar. Three different lighting designs will be presented for this space.

#### DESIGN #1

The first uses an interesting lighting element as a conversation piece. A reflective glass element with embedded LEDs will be placed on the three walls surrounding the bar. These LEDs will act as a piece of artwork that changes and flows over time. This will provide two strangers at the bar an easy topic of conversation to break the ice. General lighting will be provided by recessed downlights that are placed to provide good facial rendering.

#### DESIGN #2

The second method will try to encourage conversation by creating an environment conducive to interaction. It will tap into the adjacent fireplace environment by using dimmed incandescent to create a relaxing and comfortable atmosphere. This space should feel like a cradle. Patrons will be more likely to want to talk to others because the warm, relaxed environment will take their guard down. Special attention will be paid to the Flynn impressions to ensure the proper atmosphere is created.

#### DESIGN #3

The third method is to create a private club-like atmosphere in the small bar. Some kind of hanging element will obscure the view into the lobby and make the bar more private. Separated from the lobby, the lighting in the bar will be free to take on a life of its own. Color and contrast will be used to make a fun and exciting atmosphere that draws people in and encourages interaction.

### CONFERENCE ROOM

The conference room is small, ordinary, and very functional. The lighting design must allow many different events to take place and should enhance the appearance of the space. This is best done with an attractive direct-indirect fixture hanging over the conference table. This fixture allows the uplight and downlight components to be separately tuned to specific settings that will increase both the utility and the appearance of the space. Wall washers will complement the main fixture and increase the flexibility of the system. The final lighting design will allow many different environments to be created in the same space, which will allow the conference room to be both useful and attractive.

# LUTRON PRESENTATION FEEDBACK

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## 1<sup>ST</sup> PRESENTATION

LUKE TIGUE

- Consider trespass into windows
- Cityscape and pedestrian scape should be focus
- Good opportunity with water, maybe use a different lighting technique. Water needs to be rippling to have desired effect.
- Liked glowing orbs
- 1,2,3... hierarchy good but maybe use this hierarchy for vertical brightness
- Engage by not going in...
- Don't say ugly when talking about the conference room. Convince the client that it is challenging but wonderful
- "One 'Wow' put with too many". Be careful not to diminish your other effects. (lobby)
- Not sold on the light mirror. It engages before the user enters. Make a "cradle of comfort".

LEE BRANDT

- Spa should be relaxing, don't engage thought. Focus more on relaxation. It should be an inward quiet space. Harsh colors may cause discomfort. Also, the colors in the Detroit tunnels were seen while moving. This is a different application
- Perhaps warm colors (red/ orange) will work in the spa. Also will need white light.
- Fire glows itself so no need to light (duh, that's not what I was trying to do. Oh well. Be more clear with this part when presenting next time)
- Light back wall behind desk
- Overall very nice graphics
- Thinks conference room design is ok. You are on the right track.
- Usually have very low light in spa. You need to experience it.
- Likes street level interaction over upper window interaction.
- Spa: a table lamp or sconce may be more effective than scalloped downlights
- While in the spa people will have their eyes closed. Not a good place to try to engage with light.
- Color change may make the occupant go crazy

MIKE

- Understands your color concepts, consider concept images of other spas
- Tone down glow in reception. Make it feel like home.
- Conference room : like ring luminaire, but sharp shadows are possible with the downlights. Use a diffuse source instead of point sources.
- Keep the controls simple. Most people do not like controls.



- Tone down bar club vibe. Create an environment to encourage conversation instead
- Water, wood wall, fireplace, orient the client when describing these elements instead of just showing pictures of them
- Cove/ pendant could create shadows- wait he now sees how it works. Everything is fine.
- Façade three concepts -> make all three work together,. They are not really three different concepts. Maybe: grazing or accent at top. Prominent location let go dark with punch at windows. Do some layering and do angle studies. Change the sign if you want. 3 ideas, one end result.
- Lobby fireplace: If the object is to focus on the fireplace, make the lighting draw you down to it. Too bright of a ceiling will lose the fireplace. Don't mash too many focal points together. Light the fireplace from further out. light the architecture not the fire itself

## 2<sup>ND</sup> PRESENTATION

SANDRA

- Very professional
- Admitted that you do not have perfect solution. This is ok
- Good images and research
- Liked exterior schemes and the money slot idea. Enjoyed interaction with the building
- Lobby: liked improvements of existing fixtures (orbs). Creative take on space
- Conference Room: Do NOT say the space is boring. Tell of improvement methods.
- Spa: color and subtlety of design need improvement
- Liked the colors of the presentation: black and white with color
- Overall nice presentation, professional.
- No talk of light levels
- Fun aspects very interesting

SHAWN GOOD

- Presentation style and flow was excellent
- Several slides came up and were clicked through quickly. Get rid of these if they are not needed.
- Façade: met requirements. Showed progression from existing designs/ though process
- Lobby: overall good, fading of orbs in and out
- Liked (unable to read word) -> didn't lose the overall, pieced together hierarchy overall
- Step back, look at overall
- Do not call the conference room a janitors closet
- Good use of adjectives

CHARLES STONE

- "disarmingly successful"
- Good choice of font, simple design

- Shanghai bank has a similar conference room. See HSBC conference room, floor 35. Designed by Engle, foster
- Too many cones in spa downlight diagram
- Spa is a place to be relaxed not excited
- All for color changing, but focus on the colors chosen and the speed at which they change. DO NOT DO A RAINBOW
- Liked last slide, reminders of interesting parts of the presentation
- LED mirror idea in the bar is a “possible disaster”. But he liked that I tried. Mention how the best design occurs right at the edge. I went over it this time, but keep taking risks.

## HONORS SUPPLEMENTAL STUDY

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I will redesign the lighting of the entire first floor restaurant for my Honors supplemental study. This space is very challenging because it is out of the scope of the Hotel Felix renovation and there are no existing documents to describe any of the mechanical, electrical or architectural systems. It is essentially a blank room with an electrical service entrance. I will incorporate my architectural, mechanical and electrical depths into this space in order to completely redesign it. This will tie together my architecture design studio work with my multidisciplinary AE education.

## MAE SUPPLEMENTAL STUDY

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The MAE supplemental study will use methods learned in AE 561, Color Science, to evaluate the appropriateness of using both colored and white light in a restaurant setting that requires very high color rendering. I will sum the radiant power of two different light sources, most likely incandescent and LED, and calculate the CRI of the corresponding mixed light source. This study will compare various colors and intensities to determine the appropriate amount of colored light that can trespass into dining areas.

## BREADTH PROPOSAL - ARCHITECTURAL

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My architectural depth will focus on redesigning the first floor restaurant. There are no pictures or plans of the current design because it was completed under a separate renovation contract. My new design will be completely independent of what currently exists. The architecture of the restaurant will be inspired by my lighting design concepts for the other spaces and will complement the architecture of the lobby and the façade. The final product will be a functional restaurant that captures the essence of the luxurious, sustainable and engaging Hotel Felix.

## BREADTH PROPOSAL - MECHANICAL

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I will redesign the mechanical system in the restaurant to complement the architectural breadth proposal. It will be fed from the existing mechanical equipment and must provide adequate heating, cooling and ventilation for both dining and kitchen areas. Diffuser locations will be incorporated into the architectural design.

## DEPTH PROPOSAL - ELECTRICAL

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### SPACES

#### EXTERIOR FAÇADE

The façade is brick with white terrazzo ornamentation. It was built in 1926. The ground level has a storefront glass façade. There is an entrance canopy over the main hotel entrance. It is currently lit with metal halide spots and LED ingrades. I plan to use color changing LED spots, linear LED grazers and metal halide spots.

#### LOBBY

The lobby is the main space in this building and has many interesting materials, including a hanging glass orb sculpture, pools of water, a fireplace, a wood sculpture, and many pieces of artwork. It is currently lit by recessed MR-16 downlights. I plan to use high CRI dimmable LED downlights for general illumination.

#### BAR

The bar is connected to the lobby. It is a small space with several tables, a bar and two TVs. It is lit using decorative pendants and MR-16 downlights. I plan to light it using LEDs embedded in mirrored walls and adjustable MR-16 pinhole fixtures.

#### CONFERENCE ROOM

The conference room is a shallow ugly room with a table in it. It is currently lit with MR-16 downlights that make it feel like a cave. I plan to put a decorative fixture over the table that has downlight and uplight components. This will improve the quality of light, the rendering of faces, and the appearance of the space.

### SHORT CIRCUIT ANALYSIS

I will be doing a short circuit analysis between the Utility Primary SE-1, B-SWB-1, B-LPD-1A and 12-LP-1.

### DEPTH TOPIC 1: REPLACE INVERTER WITH A GENERATOR

The Hotel Felix currently uses an inverter for backup electricity but this can be replaced with a more efficient generator. I will study how much energy and money can be saved by comparing the electrical characteristics of both pieces of equipment. The first step will be to find data on the current inverter and to choose an appropriate generator. I will then make graphs and charts that compare their energy use and cost.

### DEPTH TOPIC 2: DESIGN ELECTRICAL DISTRIBUTION SYSTEM FOR NEW RESTAURANT

I am going to design the first floor restaurant for my architectural and mechanical breadths. The restaurant is not currently part of my building because it was renovated by a different owner and is not part of the Hotel Felix. I will design the electrical distribution system from the Restaurant Service up to the individual panelboards. I will calculate all mechanical and electrical loads for the kitchen and dining areas and will size the electrical distribution equipment appropriately.

