Bay Harbor One

Bay Harbor Island, FL.

Technical Assignment 4B: Thesis Proposal

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Lighting/Electrical

Thesis Adviser: Richard Mistrick

Executive Summary

As stated in the Building Statistics report, Bay Harbor One targets to combine sophistication and comfort in an 8 level building featuring 36 modern residences.

This report outlines the scope of work to be done in AE482 in Spring 2016. The study will include a lighting depth, an electrical depth, and two breadth topics from within the architectural engineering curriculum.

Lighting Depth

The lighting depth will consist on redesigning of the lighting schematics in four building spaces:

The Façade

The Lobby

The Open Gallery

The Rooftop space (Pool Area)

The overall concept its called Organic Flow and will connect all the spaces together and tied them with its surrounding following the different representations of water in Nature; which properly links with Bay Harbor Island its nature and connection with water. Event though all the spaces will be connected, they will all have individual personalities and characteristics to reinforce the activities that are done on each one.

Electrical Depth

The proposed electrical depth will study multiple alternative options to the current electric system in order to identify if there is room for improvement. The options go from the possible usage of a 480/277 V system for some of the larger loads, the use of aluminum and copper and which is a more viable option and finally the inclusion of PV Panels in some areas to promote energy savings.

Breadth Topics

The first breadth topic will be an acoustical analysis of the residences. With it, the proper material can be used to make sure the residences are isolated from exterior unwanted sounds. The second breadth will focus on the structural addition of a canopy into the pool deck, to provide the option of a shaded area.

Table of Contents

Building Overview

Building Name
Bay Harbor One

Location and Site
Bay Harbor Island, Florida

Building Occupant Name
BAY HARBOR ISLAND I, LLC

Type of building
Residential

Size
125.322 Square Feet

Number of stories above grade (total levels)
Eight Levels with a total height of 65'-0" above BFE (Base Flood Elevation).The total height is 74' NGVD.

Primary project team
Owners/Developers: BAY HARBOR ISLAND I, LLC; Land Developers Group (LDG) http://www.ldgcompany.com/
Team 18. http://equipo18.com/
Architect: FRANKEL BENAYOUN ARCHITECTS INC. http://www.frankelbenayoun.com/
Civil Engineer: HOLLAND ENGINEER INC. http://www.hollandengineering.com/
Landscape Architecture: GEOMANTIC DESIGN INC. http://geomanticdesigns.com/
Structural Engineer: ARBAB ENGINEERING, INC. No webpage available
MEP Engineer: JGP ENGINEERING GROUP P.A. http://www.jgpeng.org/

Dates of construction
October, 2015 – February, 2017

Cost information
Total Cost=$13,998,528
Mechanical=$1,523,435
Electrical=$748,440

Project delivery method
Design-Bid-Build

Lighting Depth

The main concept surrounding the lighting design of Bay Harbor One follows the idea of water. Being an island in the state of Florida, this concept helps link the spaces with their environment. The concept translate into the different spaces by inspiring a waterfall on the façade that represents the first impression of the building. Then its followed by a lake located represented in the Lobby, thanks to its psychological impression of relaxation, just as the calms water of a lake. Moving up into the space, there is the open galleries which are the located on each floor and are the hallways to the different residents. This space is represented by a river that promotes flow and a connection to the Façade, the Waterfall. Finally, since the building does not have a direct connection to the beach, the roof deck, more specifically the pool area becomes the representation of one.

Space I: The Façade

The Façade is the first look that the residents get of the building, therefore, it needs to be interesting and be a selling point that draws attention. Following the idea of a waterfall, it will consist of linear LED fixture with a lens on top of them, located in the surface of the concrete floor of the residents, facing the exterior. The Façade consist of this aesthetic perforated metal panels in their center that convert into the open gallery space inside. This is why, the wall behind this will be grazed and the reflection will be seen through he perforations and the sides of the metal panels. This represents the converging of a waterfall, which is why it will also be connected to controls that will control the intensity and color, to give it a dynamic effect, vs their linear counterparts on the balconies.

Space II: The Lobby

The Lobby is the first space of the building that the residence experience, there fore the idea was to make it a relax space following the concept of relaxation. The use of perimeter lighting, warmer color temperature, non-uniformity and indirect lighting became a priority In the space; This relax feeling will reassemble a lake with its calms waters. All this without excluding the spaces main functions which are circulation, reading, writing and working on screen monitors.

Space III: The Open Gallery

The open gallery is located in floor and it works as a hallway that leads to the different residences and is also open to the outside. Its main purpose is to be a transitional space which is why is linked on the concept of a rive. The plan was to place railing lights, plus floor to ceiling glass panels on the walls that would lit. Finally the sign of each apartment will have a glow of light and the planters that are facing the outside and are part of the façade will have a strip of LED light with a lens on top to create ambient light and connect the two design together.

Space IV: The Roof Deck, Pool area.

The roof deck, more specifically the pool area serve as a recreational space for the residents. To bring the beach to the building, three schematic designs where created that represent a beach in three different ways. The first one was called the sunset and consisted on pole of lights that will generate a warm glow, then engrave lights around the pool for security reasons and finally color changing LEDs in the pool that would create the color of a sunset reflect in the ocean. The second design was called the endless summer and consisted of engrave linear warm fixtures symbolizing the sunrays, then a linear fixture used inside the pool to create the same effect at the bottom and finally linear bollard to keep the idea of linearity and never ending and also to provide the space with proper amount of ambient light. The last design targeted to represent the sand of a beach: this would be done by having static pool chairs that can will glow in the dark. To achieve light levels, there would be lights placed on the railings and finally, colored spots of light will be placed randomly at the bottom of the pool to represent the different sea shells that can be found on a beach.

Schematic Design Feedback

Michael A. Barber, The Lighting Practice

Great presentation
Concept: Refine your concept.
Roof Top: Likes the illuminated chairs, should include controls on this space to.
Façade: you will probably use DMX dimming. Illustrate how the washing in the steel wall cutouts will work (show a section). Consolidate images/ design integrity (Keep walls of waterfall continuous on all Renders)
Corridor: Central core.

Sandra Stashik, Acuity Brands

Concept: was clearly built up as a story
Lobby: How are you lighting the people at the desk? they have to look well lit and friendly, no silhouettes.
Open Gallery: There's a whole lot going on, if you maintain your light language (use the same fixtures throughout the space), have a hierarchy in your spaces. If you light everything nothing has particular importance. Maybe include some downlight

Lee Brandt, HLB

Concept: Organic flow? Water? how about Aqua?
Light the landscape in your scenes
Façade: Balconies are difficult to achieve, be sure to avoid any light getting into the balconies. Have a section to show luminaire location.
Lobby: Desk front - there isn't enough light at the desk for people to know its a big statement. Have the pendants over the desk Bigger! More prominent
Open Gallery: Find super shallow surface
Rooftop: Light will never represent sand, maybe add sand on the rooftop. Be careful of the railing light, If it is too high, it can block of the views or even shine right in the faces of the people lounging in the chairs.

Dr. Richard Mistrick, Thesis Adviser

Concept: Great Job selling your concept.
Façade: Include the open galleries into the design.
Open Gallery: Make it less complicated. Light the landscape

Areas to Revisit

Concept: Name of the concept should be revised. Make sure concept is revised and connect all the spaces.
Façade: More research on the controls that will be used for the grazing on the walls behind the metal panels. Explain this better with wall sections. Make sure the fixture use din the balconies does not let any light into the residences.
Lobby: Make the front desk the main feature of the space, a lot of light make it more prominent.
Open Gallery: Look into the option of downlights; make sure to not have to much going on, give hierarchy to the lights in the space.
Rooftop: Look into the options of controls for this space. Test railing light to make sure they are not disruptive for the residents.

Task and Tools

Schematic Design

Autodesk Sketchbook, Photoshop, Sketches.

Design Development

Photoshop, Autodesk Sketchbook, Modeling designs in Revit, 3D AutoCAD and AGi32.

Documentation

AutoCAD 2015

Areas to Revisit

Revit, AutoCAD and Photoshop.

Electrical Depth and Breadth Topics

Electrical Depth

The proposed electrical depth will study multiple alternative options to the current electric system in order to identify if there is room for improvement. Next The solutions that will be analyze throughout next semester explained:

The use of a 480/277 V system for the heavier loads like the Elevators. The purpose of this is to see if there is room for energy savings, or price reduction or even both by pursuing this option.

Another option worth looking into is the usage of cooper and aluminum in the conduits. There could be potential spaces where this can be exchange and by doing so, there would be a price reduction of the overall project.

A final option that could be interesting is the inclusion of PV panels as a renewable energy source that will help reduce the cost of energy on the long run, it will help save energy and it could even become an icon of the building that could potentially improve the selling status of the residences.

Breath Topics

Acoustical

The acoustical breadth for this project will focus on the Residences walls and how to improve them in order to give privacy to its owners from inside and also to give privacy to the different residents from each other. Research should be done to find out of any software or equations that can be used to test it and get the most accurate results. Also, research should be done to find the best set of materials to improve the acoustical features if need be.

Structural

The structural breadth for this project will consist on the addition of a wood canopy on one side of the Pool deck area to provide a shaded area as an option. The Canopy will have to follow the right calculations to stand and also to supports large wind loads for being in a hurricane zone like Florida, specially on a rooftop.

Project Schedule