CASINO GOLD

EAST COAST, USA

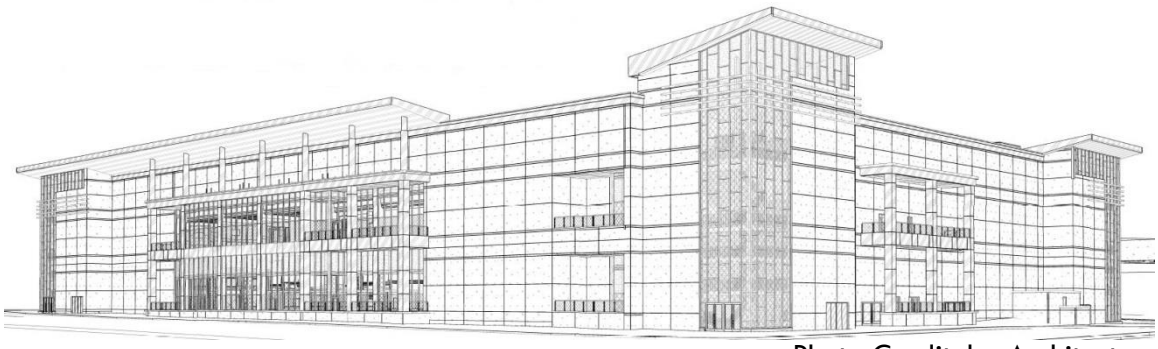

Photo Credit: ka Architecture

12/12/2013

Spring Semester Thesis Proposal

Brad Robertson

Penn State Architectural Engineering – Lighting/Electrical Option

Faculty Consultant – Shawn Good

EXECUTIVE SUMMARY

Casino Gold is a three level casino located in the eastern United States. The building is 309,450 sf and houses gaming, dining, bars, a multi-function space, a World Series of Poker Room, and even private gaming areas. The first two levels of the casino are for the guests, while the third level is mainly offices for the employees.

The lighting depth will include four spaces within the casino: the outdoor plaza, pre-function space, poker room, and player's lounge. The schematic design for each of these spaces will be finalized during the spring semester. These designs will meet the design criteria and considerations developed in both Technical Report 1 and Technical Report 3.

The atmosphere inside of a casino is very much centered on a social experience. Whether you are enjoying a night out with your friends or you end up meeting complete strangers while playing your favorite game, people are always connecting with each other. The concept for Casino Gold's lighting design will be "Connecting with People." During our daily lives we are constantly connected to others through social media, email, and messaging. With all of this technology it can be easy to forget that face-to-face interaction with others is still important. A strong design that focuses on intimacy in certain spaces, and excitement in others, will be able to bring people together.

The electrical depth will include changes to the current distribution system that reflect the new lighting design for each of the four spaces. The new lighting design will affect branch circuits, panelboards, and possibly distribution panels.

The electrical depth will also include the addition of a photovoltaic array to the casino roof. The vast amount of roof space on this building provides the ideal canvas for a large array and the surrounding buildings have low profiles. It will be important to conduct a solar study of the area to estimate the production of the array, as well as a detailed cost analysis. A structural analysis will need to be completed to determine the effect of adding this load to the roof of the building.

The proposed solar array will be added to the roof of the casino. It is necessary to evaluate the structure of the roof and columns that will be supporting the additional load. This analysis will determine if new structural members are needed and will be a breadth for spring semester.

An in-depth study will be completed to detail the cost and schedule impacts of adding the proposed solar array. Assembly estimates and supplier quotes will be obtained for the array. Comparative case studies will also be researched to report on the impacts this change in construction will cause.

Contents

THE BUILDING

Casino Gold is a three level casino located in the eastern United States. The building is 309,450 sf and houses gaming, dining, bars, a multi-function space, a World Series of Poker Room, and even private gaming areas. The first two levels of the casino are for the guests, while the third level is mainly offices for the employees.

The site plan seen below shows the main casino building, a large parking structure, and a separate Central Services plant.

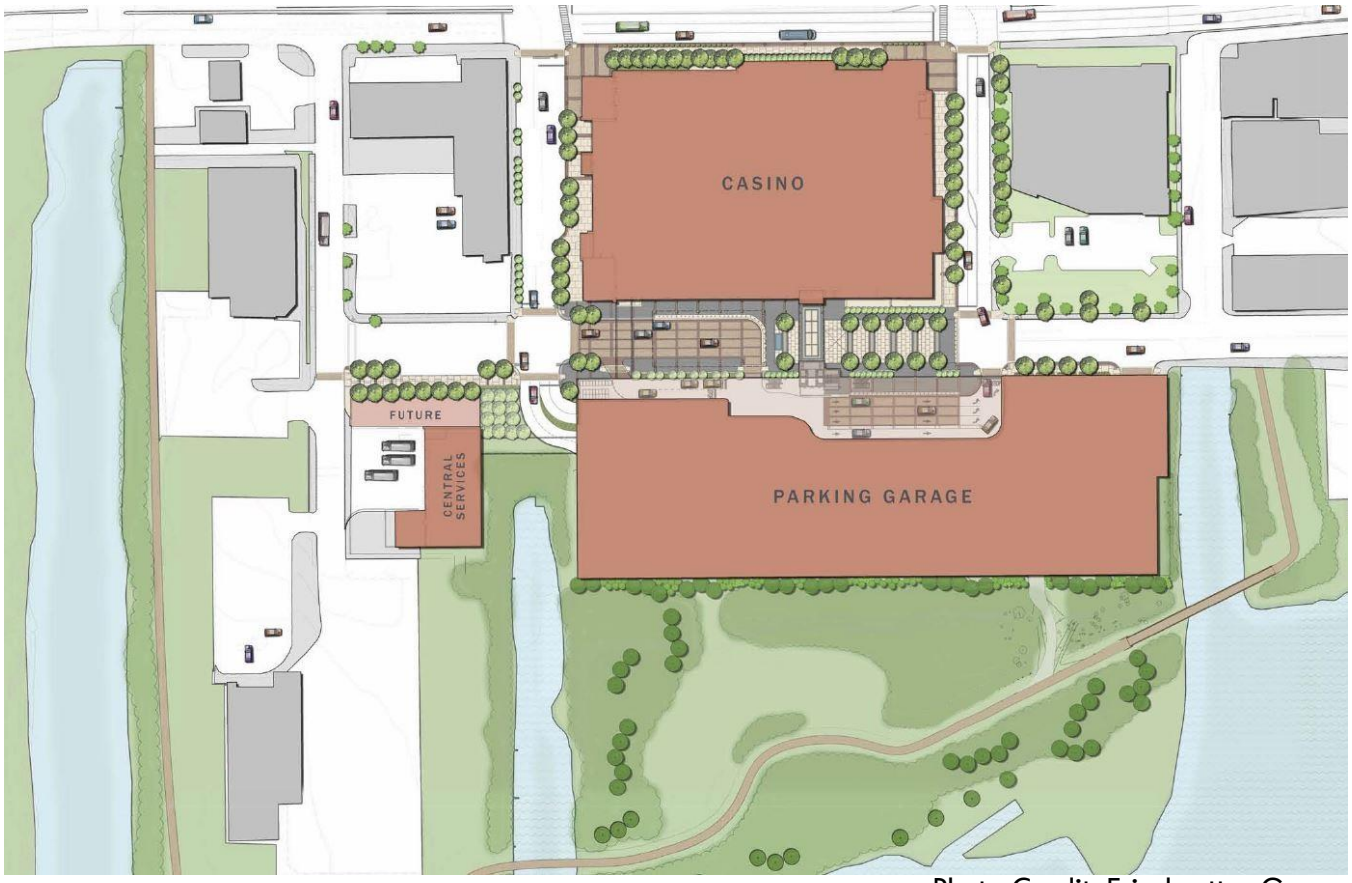

Photo Credit: Friedmutter Group

THE TEAM

Executive Architect: ka
Design/Interiors Architect: Friedmutter Group
Construction Manager: Whiting-Turner
Structural Engineer: Carroll Engineering, Inc.
MEPT Engineer: JBA Consulting Engineers
Lighting Design: The Lighting Practice

CONSTRUCTION AND COST

Approximate cost: $400 million
Approximate dates of construction: June 2013 – September 2014

LIGHTING DEPTH

The lighting depth will include four spaces within the casino: the outdoor plaza, pre-function space, poker room, and player's lounge. The schematic design for each of these spaces will be finalized during the spring semester. These designs will meet the design criteria and considerations developed in both Technical Report 1 and Technical Report 3.

CONCEPT

The atmosphere inside of a casino is very much centered on a social experience. Whether you are enjoying a night out with your friends or you end up meeting complete strangers while playing your favorite game, people are always connecting with each other. The concept for Casino Gold's lighting design will be "Connecting with People." During our daily lives we are constantly connected to others through social media, email, and messaging. With all of this technology it can be easy to forget that face-to-face interaction with others is still important. A strong design that focuses on intimacy in certain spaces, and excitement in others, will be able to bring people together.

LUTRON DESIGNER COMMENTS

Sandra Stashik:

- PowerPoint presentation was well designed, good pace when presenting
- Appreciated that images where not all inverted black and yellow, included images for applications and fixtures
- Great that presentation started with plaza and tied in Connecting With People concept
- Festive schematic (design 3) was favorite for the plaza
- Schematic design 1 for the plaza had too many fixtures around each tree
- Criteria of 50fc for pre-function space seems excessive, if requested by owner then state that in the presentation
- Liked composition in pre-function space
- Furniture is displaying too low in Revit model, confusing for viewers
- Nice concept for Poker Room, consider different lighting for high-stakes area and low-stakes area
- Show that the bar is not included in the Poker Room
- Nice job of showing pendants in the Poker Room image
- Potentially change ceiling structure in Player's Lounge
- Player's Lounge lighting needs to be dimmable, also more glitzy and intimate
- Overall, very nice presentation

Kari Nystrom

- Good presentation, liked images of pendants and the way they were incorporated into the design
- Poker Room will prove to be very interesting from an integration standpoint, consider beams, diffusers, cameras, etc.
- Would they ever sub-partition the Poker Room?
- If the Poker Room would be sub-partitioned, would that affect the placement of the downlights?
- Could make high-stakes poker area stand out more with different design

OUTDOOR PLAZA

The outdoor plaza for Casino Gold is going to be one of the first parts of the casino that guests will encounter. It is important to create a great first impression with arriving guests. This will most likely be a meeting spot for many visitors and it will be used at all hours of the day. Due to the twenty-four hour nature of the casino, safety at night is a top priority for this space.

A safe lighting design for the plaza will include overhead lighting, most likely string lights, to render faces of the guests. The lighting designers at Lutron commented that if the light is only coming from below, people will not see other faces well and will not feel safe at night.

During the spring semester, one schematic design will be chosen and completed from the three that have been proposed. The chosen design will include a performance analysis as well as plans and renderings. The final design will serve as a safe meeting spot for guests and also guide them towards the main entrance of the casino.

PRE-FUNCTION

Once guests have entered the first level of the casino, they may need to attend a dinner, meeting, or event in the multi-purpose room. While waiting for these events to begin it is likely that the guests will occupy the pre-function space.

The lighting design in the pre-function space will create an impression of spaciousness for the guests. It is also important that the design is open and flexible for different uses of the space. A dimming system will be put into the pre-function design so that event planners can alter the level of light to fit their specific needs.

POKER ROOM

The lighting design for the Poker Room will provide a comfortable environment for the players, especially because many players can be there for hours on end. This room will function much like a workspace for the casino. It is important to provide a high quality ambient light throughout the space for the games being played.

Discipline coordination will be key for this space because the proposed lighting design cannot interfere with the view of security cameras. Mechanical devices such as diffuses may also affect the layout downlights or position of pendants installed in the space.

The high limit area of the Poker Room will incorporate a slightly different design than the rest of the Poker Room. This difference in design will help to divide the space and attract the high end players to the exclusive tables.

PLAYER'S LOUNGE

The Player's Lounge will bring the "Connecting with People" concept full circle by creating an intimate setting for the guests to visit and interact with each other. This is one of the few places in the casino that the owner can make a profit from beverage sales, so the lighting design of the bar within the Player's Lounge will need to attract guests from outside of the lounge.

The lounge is divided into a seating area and a bar. The lighting design will bring these two sides of the room closer together, possibly with a redesign of the ceiling structure. This redesign will provide a smooth transition from one side of the lounge to the other.

METHODS AND TOOLS

The lighting design will be finalized in the spring semester. Comments from the lighting designers at Lutron will provide guidance for completing the design. The spaces will be analyzed in AGI32 to ensure that all related lighting criteria is met. The designs will also meet the energy standards provided by ASHRAE 90.1. Renderings for each space will be done using either Revit or AGI32. Lighting plans and schedules for each space will also be provided.

ELECTRICAL DEPTH

The power distribution for Casino Gold begins in the Central Plant building located just outside the casino. Service from Baltimore Gas and Electric enters the Central Plant into multiple 480/277V Secondary transformers. These transformers are owned by Baltimore Gas and Electric even though they are inside of casino property. Adjacent to each transformer is a switchboard that begins a branch of the distribution system. Distributions panels are separated for emergency loads, lighting loads, high voltage loads, and low voltage loads.

The electrical depth will include changes to the current distribution system that reflect the new lighting design for each of the four spaces. The new lighting design will affect branch circuits, panelboards, and possibly distribution panels.

The electrical depth will also include a cost analysis of modifying the distribution system. The initial cost of the distribution system may possibly be reduced by incorporating more electrical rooms in central locations of the building. When these central locations are added the runs will be shortened and wire sizes reduced, possibly resulting in lower cost of construction.

One technique to reduce the amount of energy bought from the utility could be incorporating cogeneration from a PV array. The vast amount of roof space on this building provides the ideal canvas for a large array and the surrounding buildings have low profiles. It will be important to conduct a solar study of the area to estimate the production of the array, as well as a detailed cost analysis. A structural analysis will need to be completed to determine the effect of adding this load to the roof of the building.

STRUCTURAL BREADTH

The proposed solar array will be added to the roof of the casino. It is necessary to evaluate the structure of the roof and columns that will be supporting the additional load. This analysis will determine if new structural members are needed and will be a breadth for spring semester.

CONSTRUCTION MANAGEMENT BREADTH

An in-depth study will be completed to detail the cost and schedule impacts of adding the proposed solar array. Assembly estimates and supplier quotes will be obtained for the array. Comparative case studies will also be researched to report on the impacts this change in construction will cause.

SPRING SCHEDULE