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ST FRANCIS FRIARY



kRISTIN mARUSZEWSKI

LIIGHTING/eLECTRICAL oPTION

aDVISOR: mISTRICK

kRISTIN mARUSZEWSKI

LIIGHTING/eLECTRICAL oPTION

aDVISOR: mISTRICK

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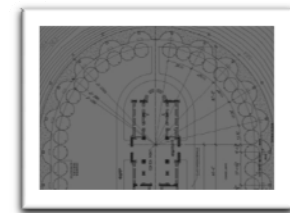
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EXECUTIVE SUMMARY

The purpose and goal of this report is to research, study, and document the existing conditions that affect the lighting system in the St. Francis Friary. In order to get the most accurate and in-depth depiction of the system, the study was narrowed to four spaces serving a variety of purposes. These four spaces include as follows:

SPACE 1| LARGE OFFICE SPACE
SPACE 2| SPECIAL PURPOSE SPACE
SPACE 3| CIRCULATION SPACE
SPACE 4| OUTDOOR SPACE

LIBRARY
CHAPEL
FOYER
COURTYARD

In each of these spaces, this report will examine and discuss the following categories:

- 1| Luminaires
- 2| Light Loss Factors
- 3| Controls/Daylighting
- 4| Room Surface Characteristics
- 5| Design Criteria
- 6| Illuminance Levels
- 7| Power Allowance

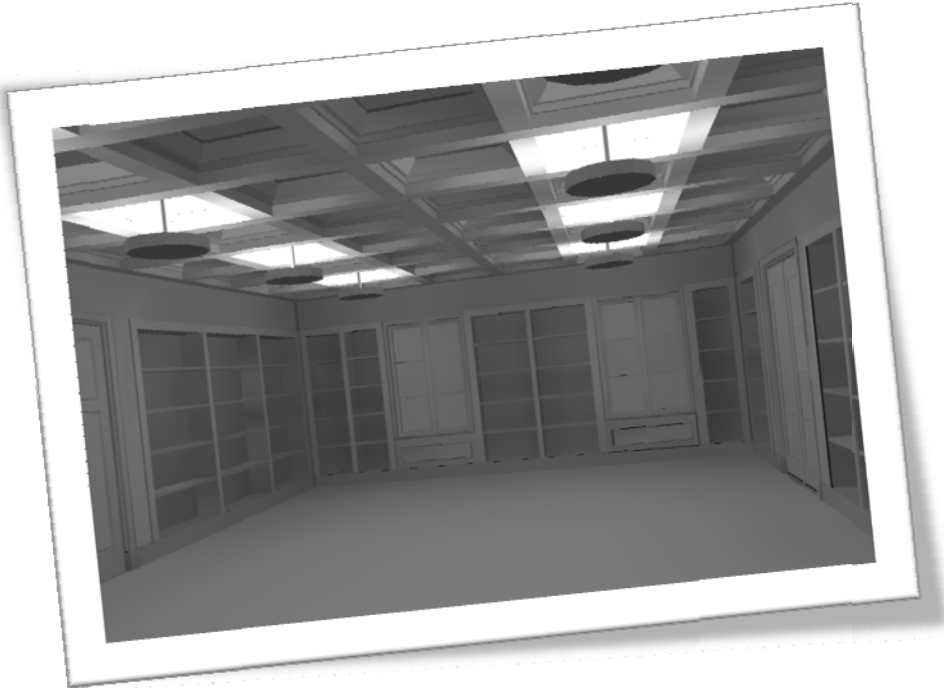
These topics help to break down the study into smaller focuses and provide a way of quantifying the analysis of the lighting system chosen for each space.

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SPACE 1| LARGE OFFICE SPACE| LIBRARY





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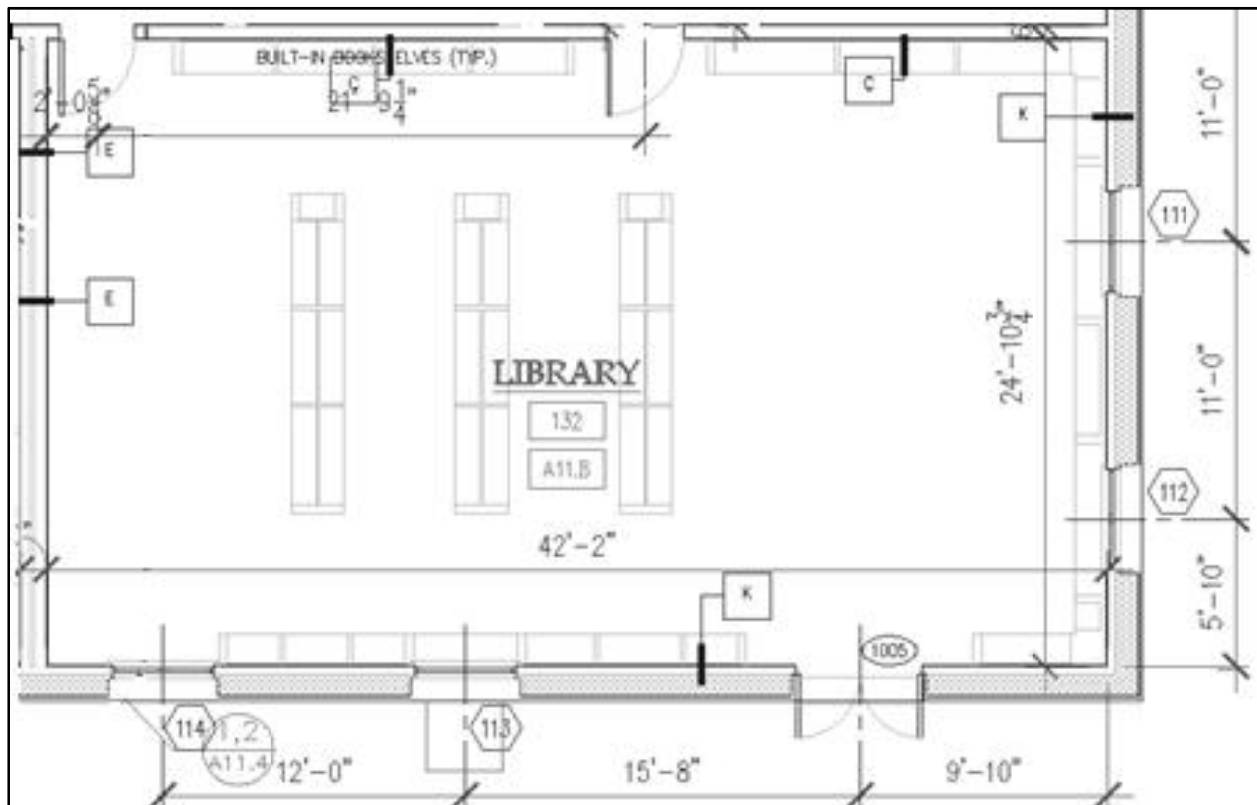
LIIGHTING/eLECTRICAL oPTION

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LIBRARY | EXISTING SPACE CONDITIONS

DESCRIPTION OF SPACE:

The library is a 42'x25' space located in the Southeast corner of the building. While the library is not a far walk from the refectory and chapel, the adjacent hallway, dish room, and closet allow for an acoustical barrier to the space. Its proximity to the chapel makes the library convenient to visit before and after a sermon. The built-in bookshelves, carpeting, and wood finishes form a comfortable space. The South and East walls contribute to this peaceful atmosphere with windows overlooking an arch-covered walkway supported on columns, also known as an "Arcade".





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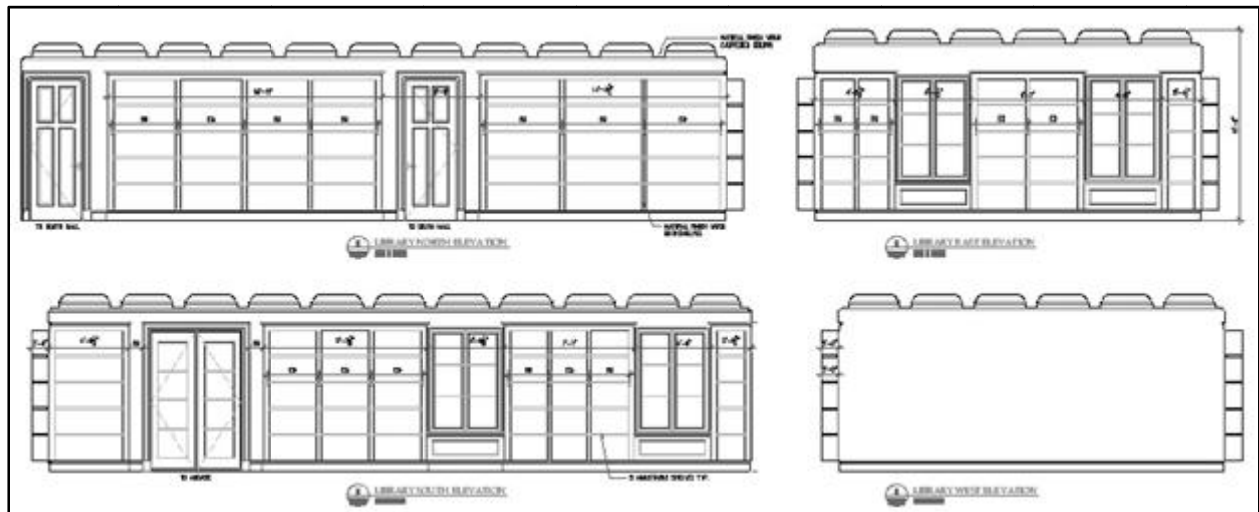
LIGHTING/eLECTRICAL oPTION

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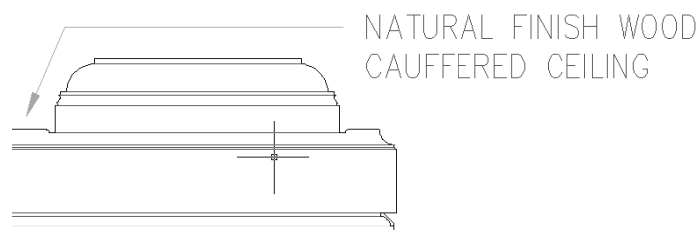
LIBRARY | EXISTING SPACE CONDITIONS

SURFACE MATERIALS:

SURFACE	MATERIAL	REFLECTANCE
FLOOR	CARPET	0.11
WALLS	PAINTED GYPSUM BOARD	0.8
CEILING	NATURAL FINISHED WOOD	0.09
WINDOWS	DOUBLE PANED WITH GLAZING	0.04
DOORS	NATURAL FINISHED WOOD AND ALUMINUM WITH GLASS PANES	0.09



CEILING CROSS-SECTION:





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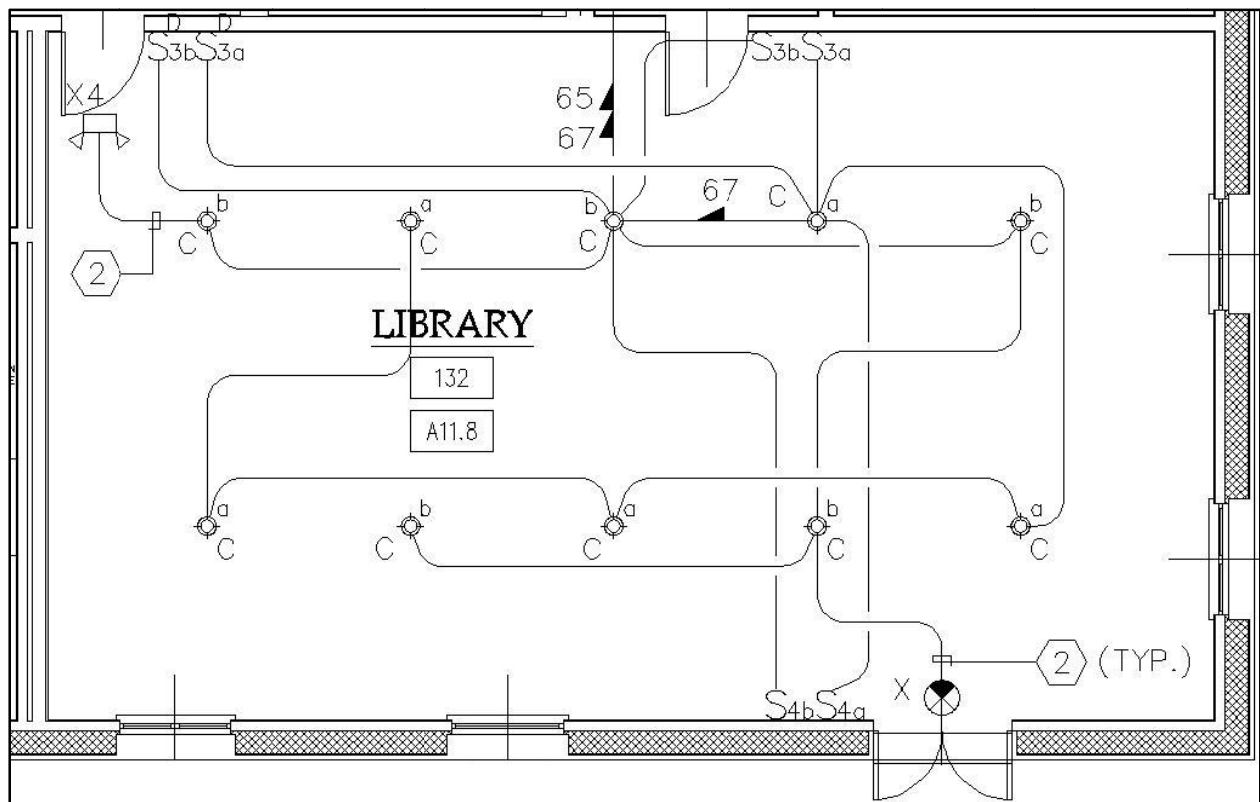
LIGHTING/eLECTRICAL OPTION

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LIBRARY | EXISTING LIGHTING CONDITIONS

DESCRIPTION OF LIGHTING SYSTEM:

The lighting system in the Library is simple in its design. One type of luminaire, an indirect pendant, is used throughout the entire space. This creates a uniform design and enhances the space by accenting the natural wood finish in the ceiling wells. The library also utilized a dual-switch system which allows for different lighting levels, as well as for energy savings. Four windows are placed along the South and East side of the building making use of natural sunlight.





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LIGHTING/eLECTRICAL oPTION

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LIBRARY | EXISTING LIGHTING CONDITIONS

LUMINAIRE SCHEDULE:

TYPE	DESCRIPTION	LAMPS	VOLT	MOUNTING	REMARKS	MANUFACTURER & CATALOG NO.
C	RUSTIC BRONZE PENDANT WITH INDIRECT GLASS BOWL	3-75W MED BASE	120	PENDANT	NONE	HINKLEY LIGHTING ITEM 4292 RN
X	EDGE LIT EXIT SIGN FIXTURE	LED	120	UNIVERSAL	NICKEL CADMIUM BATTERY	LITHONIA #LRP-GMR-120/277-ELN
X4	CONCEALED EM. LTG. UPON ELECTRICAL FAILURE, LUMINAIRE FLIPS DOWN	2-MR16	120	RECESSED	NICKEL CADMIUM BATTERY	CONCEALITE 5000 SERIES F5 50 90 RT PT NC

LIGHT LOSS FACTORS:

All light loss factors for the library are based on the assumption that the dirt condition is 'Clean' and the frequency of cleaning is 6 months.

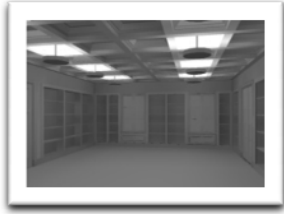
TYPE	CATEGORY	LLD	LDD	RSDD	BF	TOTAL
C	VI	0.92	0.92	0.89	1.0	0.75

CONTROLS:

In this space, the lighting levels may be controlled by the occupant. Two switches, each controlling half (5) of the luminaires in the space, are placed by the entrance to the room. These switches allow the user the decision to alter the conditions to their desired lighting levels. The uniformity of light will be altered as well. Though the controls do not provide a plethora of lighting options, they are accessible and easy to manage. The dual switching system gives an opportunity to change the lighting condition as well as to save energy.

DAYLIGHT ELEMENTS:

This room, because of its location in the Southeast corner has the ability to take full advantage of daylight. Both the morning and midday sunlight may be enjoyed in the library while the Arcade still offers shade from direct rays. The dual switching system can be utilized during the hours that daylight enters the space in order to save energy. The exterior view also provides a chance for the occupant's eyes to take a break from their reading material.



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LIBRARY| DESIGN CRITERIA

ILLUMINANCE:

The illuminance level for this space recommended by the Illuminating Engineering Society of North America (IESNA) is 30 fc on both the horizontal and vertical planes. The reading material found in the library is glossy magazines, photocopies, or material that is handwritten with a #2 lead pencil or a ballpoint pen. The significant horizontal plane is the desks in the room where reading, studying, and journaling are the expected activities. The critical vertical plane is the bookshelves or reading stacks.

GLARE:

Books, magazines, and paper materials will be read in this space. Glare may distract the reader and cause lower productivity. The use of indirect pendants cuts down on the direct glare. As well, the Arcade's overhang blocks direct rays from entering the room and reduces the chance of glare caused by direct sunlight.

VDT CRITERIA:

There are currently no VDTs in this space. However, if installed in the future, the necessary illuminance levels for the reading stacks are above that which is required for the VDT screens. Thus, the lighting levels necessary will already have been met. The other criteria that will need to be taken into account in order to prepare for the VDT screens are the luminance ratios. The luminance ratios necessary for the VDT screen should be adequate in this space since this will be taken into account when designing for glossy magazines.

POWER ALLOWANCE:

According to ASHRAE 90.1- 2004 Energy Standard for Building's Space-by-Space method, the allowable power density for this space is 1.7 W/ft². With all luminaires in use, the library's power density is 2.1 W/ft², while with half the luminaires, it is only 1.1 W/ft².

ACCENT LIGHTING:

The main focus of this room is the books on the bookshelves. Accent lights are not necessary unless the ambient lighting in the space demands a supplement in order to meet required illuminance levels.



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LIBRARY | DESIGN CRITERIA

LIGHT DISTRIBUTION ON TASK PLANE:

Reading requires that the level of light be consistent across the surface. The lighting design in this space should provide a uniform distribution across the task plane as well as along the faces of the books.

COLOR APPEARANCE/CONTRAST:

Wood is the most prevalent interior finish in this space. To showcase the materials used in this room the color rendering should be adequate in this space. Color rendering and proper contrast levels will also be important when reading magazines and picture Bibles.

PSYCHOLOGICAL ASPECTS:

In order for the space to conform to its purpose, the space will need to give the impression of Clarity. Under the Flynn study, this impression is achievable through implementing a lighting system that uses high and uniform light levels.

APPEARANCE OF SPACE AND LUMINAIRES:

The architecture in this space efficiently fulfills the purpose. The shelves, though integrated into the space, are a focal point and a decorative aspect. The wells in the ceiling also provide visual interest. The simple and elegant appearance of the space calls for a lighting plan that will compliment the architecture of the space and not detract from the beauty of the woodwork.



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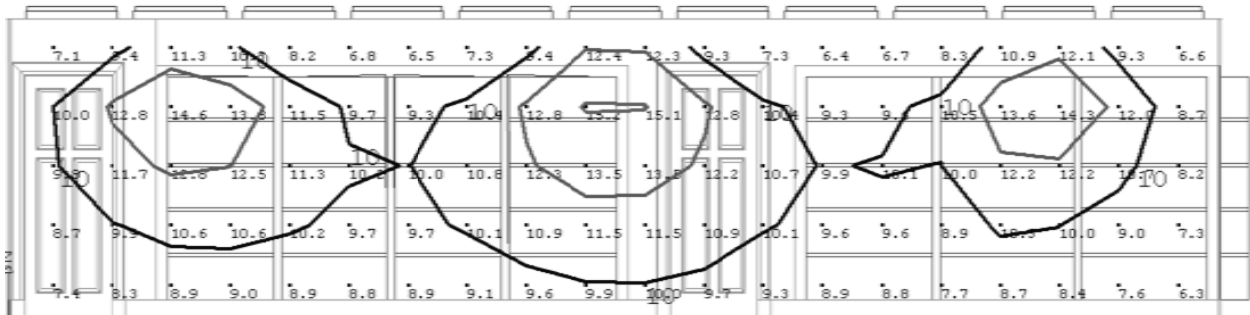
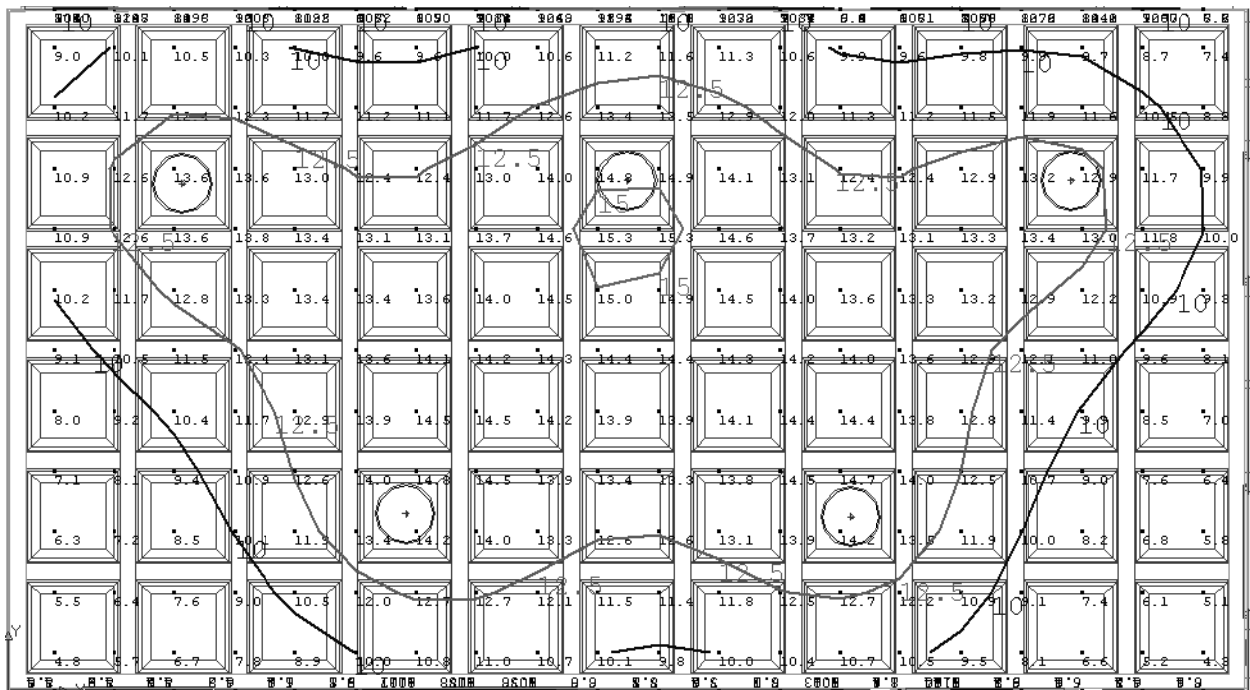
LIIGHTING/eLECTRICAL oPTION

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LIBRARY | CALCULATIONS

ONE SWITCH ON (HALF LUMINAIRES):

SURFACE	RECOMMENDED VALUES	ACTUAL VALUES			
		AVG	MAX	MIN	MAX/MIN
HORIZONTAL	30 fc	11.5 fc	15.3 fc	4.0 fc	3.83
VERTICAL	30 fc	8.71 fc	15.3 fc	3.1 fc	4.94





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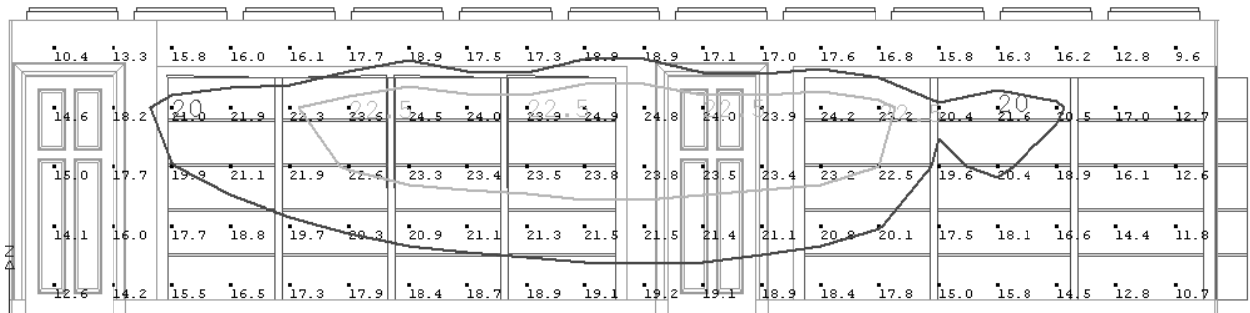
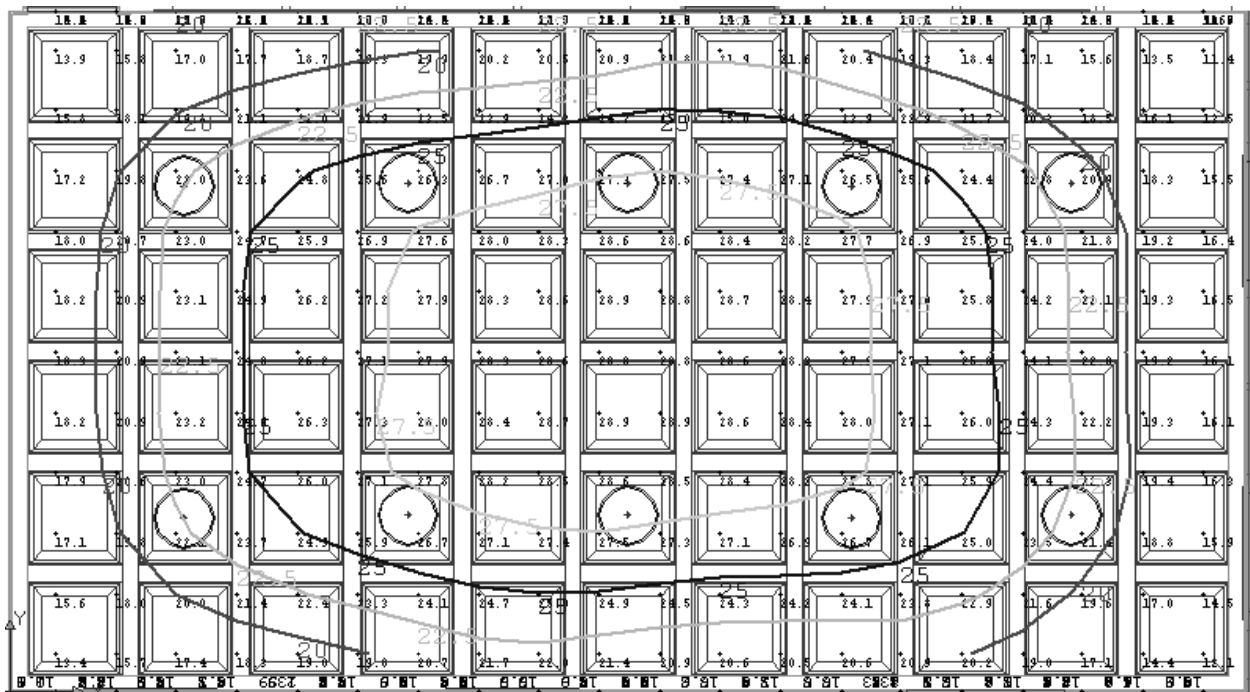
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LIBRARY | CALCULATIONS

TWO SWITCHES ON (ALL LUMINAIRES):

SURFACE	RECOMMENDED VALUES	ACTUAL VALUES			
		AVG	MAX	MIN	MAX/MIN
HORIZONTAL	30 fc	23.04 fc	28.9 fc	11.4 fc	2.54
VERTICAL	30 fc	18.73 fc	15.3 fc	3.1 fc	4.94





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LIBRARY| EVALUATION

EVALUATION OF EXISTING LIGHTING SYSTEM:

The library has a consistent purpose. This space will continually be used for the same tasks of reading, writing and reflecting. Because of this, the space does not need a complex and flexible lighting layout. The lighting system simply needs to meet the requirements listed above.

The fixtures chosen for the space achieve the purpose of providing a uniform distribution on the work plane, giving the impression of clarity minimizing glare, and accenting the space without detracting from the architectural design,. The fixture chosen, a pendant providing uniform, indirect ambient lighting is simple and functional. The choice of one fixture for the entire space minimizes the hassle of maintenance and controls. The use of upward light draws out the features of the natural wood finishes on the ceiling while avoiding direct glare. The aesthetics of the fixture chosen do not detract from the grand architecture of the space.

This system does not meet the light levels recommended by IES standards or the power requirements of ASHRAE Standard 90.1. The use of incandescent lamps makes the space have a comfortable atmosphere. Compact fluorescent light bulbs, though higher in initial cost, provide a reasonable solution to the power restrictions and light level recommendations that are not being met by the incandescent lamps chosen for this project.



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LIBRARY | RELEVANT COMPUTER FILES

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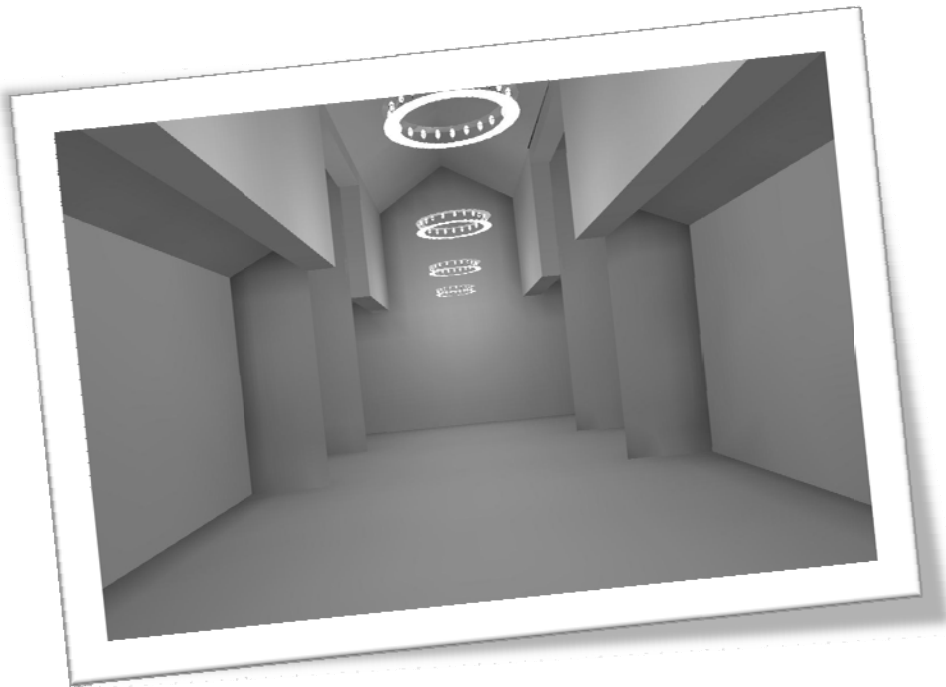
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SPACE 2| SPECIAL PURPOSE SPACE| CHAPEL





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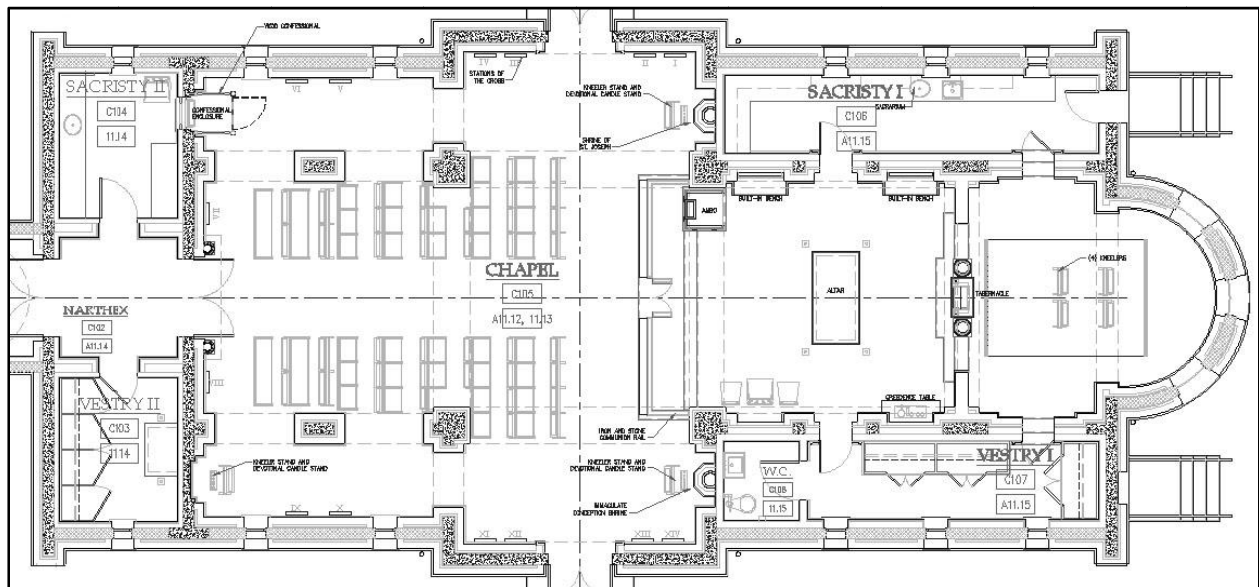
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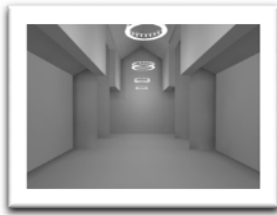
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CHAPEL | EXISTING SPACE CONDITIONS

DESCRIPTION OF SPACE:

The Chapel juts out of the East face of the building to create its own peninsula. To enter the Chapel, one must travel through two vestibules and the narthex. These three spaces, much like the cleansing stations before a chemical laboratory, provide three airlocks where all contaminants may be stripped from your life prior to entering the holy, undefiled chapel. Natural light cascades into the space from the second story windows on the North, South and East side of the space. A statue of Jesus on the cross is placed above the pulpit as a reminder that the focus of the worship and sermon are not on oneself but on God.





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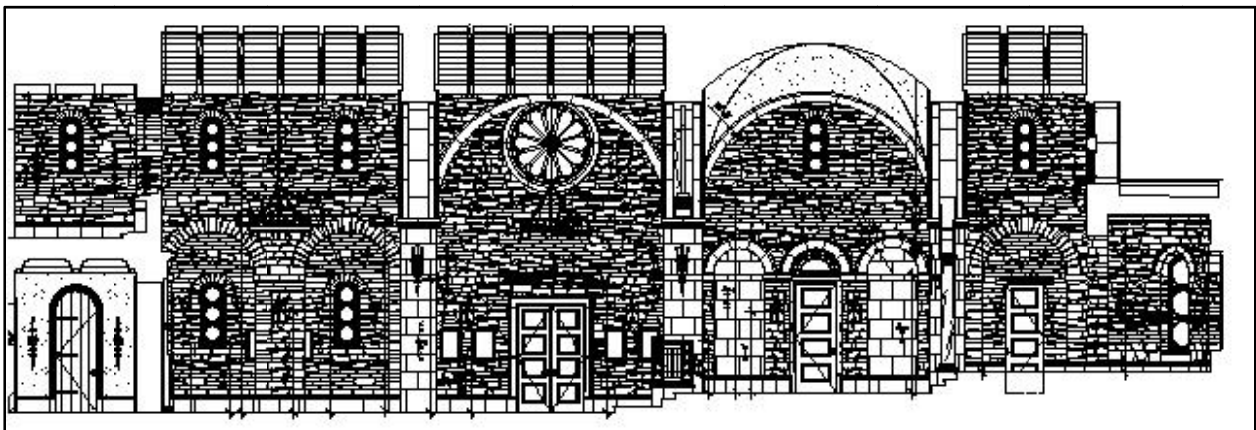
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CHAPEL | EXISTING SPACE CONDITIONS

SURFACE MATERIALS: [CHANGE]

SURFACE	MATERIAL	REFLECTANCE
FLOOR	STONE	0.17
WALLS	STONE	0.17
CEILING	VARIES - WOOD/STONE	0.17, 0.09
WINDOWS	STAINED GLASS	0.11
DOORS	NATURAL FINISHED WOOD	0.09





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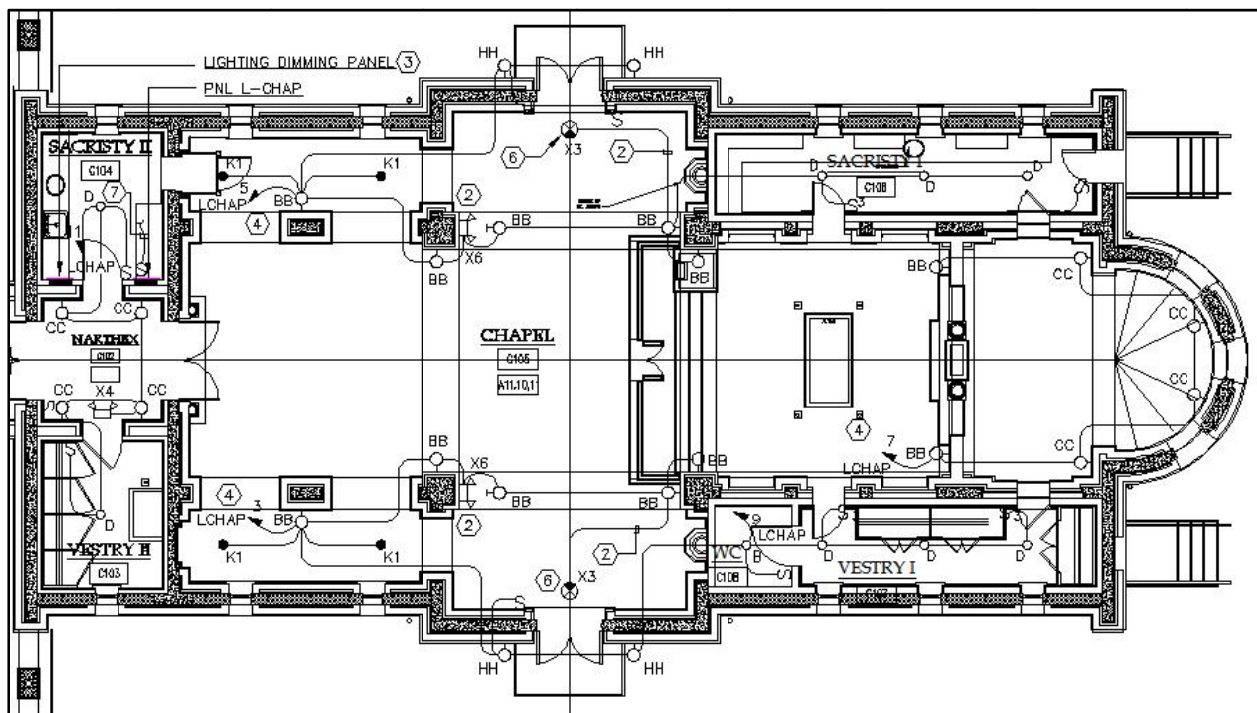
LIGHTING/eLECTRICAL oPTION

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CHAPEL | EXISTING LIGHTING CONDITIONS

DESCRIPTION OF LIGHTING SYSTEM:

There are three main luminaires in this space, two of which are custom fixtures, the third a recessed down light used as ambient lighting. The great size of this space requires a large fixture which would be difficult to obtain from a manufacturer. The custom fixtures, however, allow the Architect to use the lighting as a decorative element, as well as provide uniformity in design throughout the space. Unlike the library, this space has more than one layer of light. The down lights provide ambient light for tasks in the congregational area. And while the pendant fixtures draw your eye all the way up to the 26 ft high arched ceilings, making you aware of your size in relationship to the space, the sconces bring the space back to a personal level. This space uses both incandescent and fluorescent lamps creating a comfortable and dimmable atmosphere.





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CHAPEL | EXISTING LIGHTING CONDITIONS

LUMINAIRE SCHEDULE:

TYPE	DESCRIPTION	LAMPS	VOLT	MOUNTING	REMARKS	MANUFACTURER & CATALOG NO.
BB	CUSTOM FIXTURE SPECIFIED BY ARCHITECT	A-19	120	WALL	NONE	CUSTOM BY ARCHITECT
CC	CUSTOM PENDANT FIXTURE SPECIFIED BY ARCHITECT	A-19	120	PENDANT	NONE	CUSTOM BY ARCHITECT
K1	6" RECESSED FLUORESCENT CAN DOWNLIGHT WITH INTEGRAL EMERGENCY	2-26DTT	120	RECESSED	NONE	LITHONIA #LF6-2/190TT F602120 EL
X3	EDGE LIT EXIT SIGN, REAR MOUNTING, WITH BRONZE TRIM	LED	120	UNIVERSAL	NICKEL CADMIUM BATTERY	LITHONIA #LRP BZ 1 GC 120/277 EL
X6	THERMOPLASTIC EMERGENCY LIGHTING UNIT	(5) 4 W KRYPTON	120	WALL	90 MINUTE MINIMUM BATTERY	LITHONIA ELM B

LIGHT LOSS FACTORS:

All light loss factors for the chapel are based on the assumption that the dirt condition is 'Clean' and the frequency of cleaning is 6 months.

TYPE	CATEGORY	LLD	LDD	RSDD	BF	TOTAL
BB	I	0.88	0.96	0.94	1.0	0.79
CC	I	0.88	0.96	0.94	1.0	0.79
K1	IV	0.90	0.94	0.97	1.02	0.84

CONTROLS:

The recessed down lights in this space are on a dimmable system, allowing for differing lighting levels and also for the chance to take advantage of the Alabama sunlight.

DAYLIGHT ELEMENTS:

This double heighted space is surrounded on three sides by large expanses of stained glass that allow light to infiltrate into the space.



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CHAPEL | DESIGN CRITERIA

ILLUMINANCE:

The illuminance level for the Congregational Area of this space recommended by the IESNA is 10 fc for the Horizontal plane and 3 fc for the Vertical plane. The recommended illuminance levels for the Leadership Area or pulpit is 30 fc for both the Horizontal and Vertical planes.

POWER ALLOWANCE:

According to ASHRAE 90.1- 2004 Energy Standard for Building's Space-by-Space method, the allowable power density for this space is 0.9 W/ft² for the Congregation Area and 2.4 W/ft² for the Leadership Area.

DAYLIGHT INTEGRATION:

Stained glass windows line three of the four walls in this double height space. Daylight streams through these windows creating a beautiful appearance of natural color and a feeling that one is getting a glimpse of heaven. Light is the first element that God introduced into the world, and thus the contribution of this perfect gift to the chapel is significant. Additionally, in accordance with ASHRAE Standards, the allowable power density for the Congregation Area is only 0.9 W/ft². With a large footprint as well as a double height ceiling, this low value may be hard to attain. With the location of the space as well as the hours of operation, the integration of daylight will make it possible to meet the power density criteria.

DIRECT GLARE:

Light from a natural source such as the sun is hard to control. In order to reduce the chance of glare, the windows in the Chapel are tinted various colors to create a design while simultaneously blocking the UV rays and minimizing the discomfort from the direct sunlight.

ACCENT LIGHTING:

The hierarchy of lighting levels in the space should reflect the importance of each task. The highest light levels should be on the cross, second should be the preacher, and last the friars in training.



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LIIGHTING/eLECTRICAL oPTION

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CHAPEL | DESIGN CRITERIA

Accent lighting should be used to magnify the statue of Jesus on the Cross overhead of the pulpit.

PSYCHOLOGICAL ASPECTS:

The chapel should give the impression of privacy/intimacy. Flynn proved that this can be achieved through peripheral and non-uniform lighting.

FLEXIBILITY:

This space, unlike the others, may be used for several purposes. This space may be used for public services as well as for private use. It may also be used in the daytime, as well as at night. The lighting system should be able to adapt to the situation.



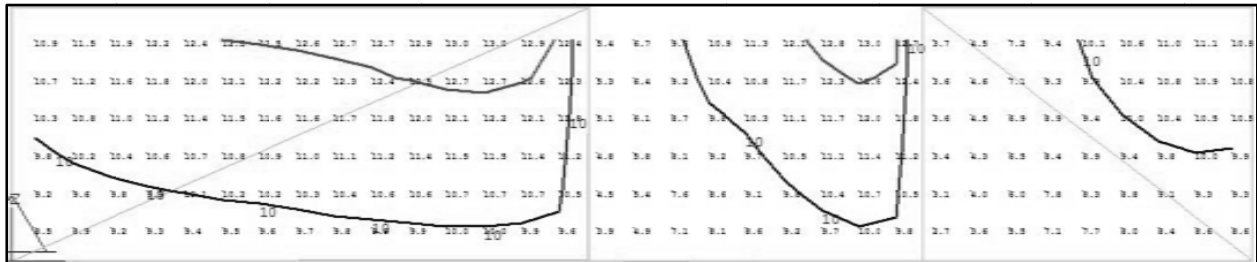
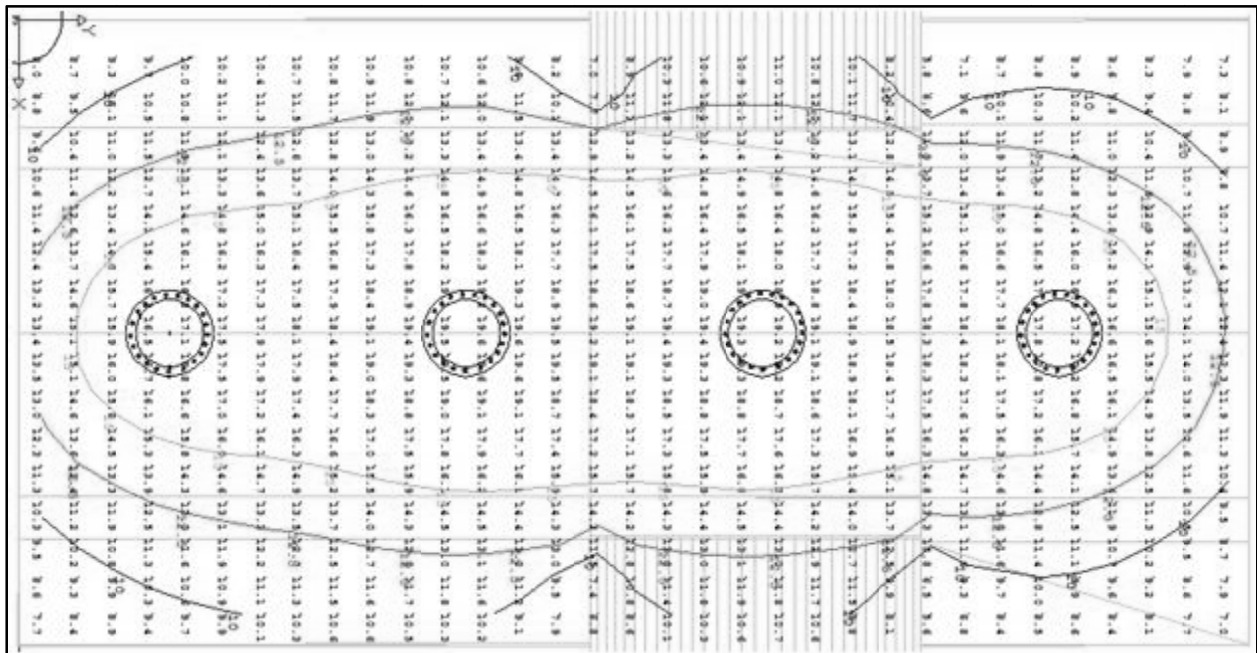
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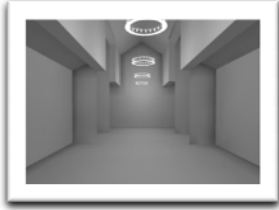
LIGHTING/eLECTRICAL oPTION

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CHAPEL CALCULATIONS

SURFACE	RECOMMENDED VALUES	ACTUAL VALUES			
		AVG	MAX	MIN	MAX/MIN
HORIZONTAL	10 fc	13.87 fc	19.6 fc	5.6 fc	3.5
VERTICAL	3 fc	9.75 fc	13.0 fc	2.7 fc	4.81





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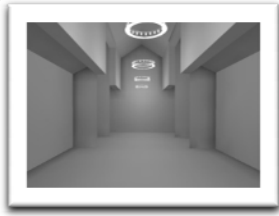
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CHAPEL | EVALUATION

EVALUATION OF EXISTING LIGHTING SYSTEM:

The lighting in the Chapel is an example of a well integrated system. It takes into account the shape, size, and aspects of the space and adjusts accordingly. The large pendant fixtures, designed by the architect, use small sources to provide a sparkle in the space. This, in conjunction with the bright colors on the large expanses of stained glass windows, gives an impression of seeing the glory of heaven. The use of all custom fixtures in this space creates unity in the design. The illuminance levels were easily achieved and the dimming controls allow for flexibility in the space.



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CHAPEL | RELEVANT COMPUTER FILES

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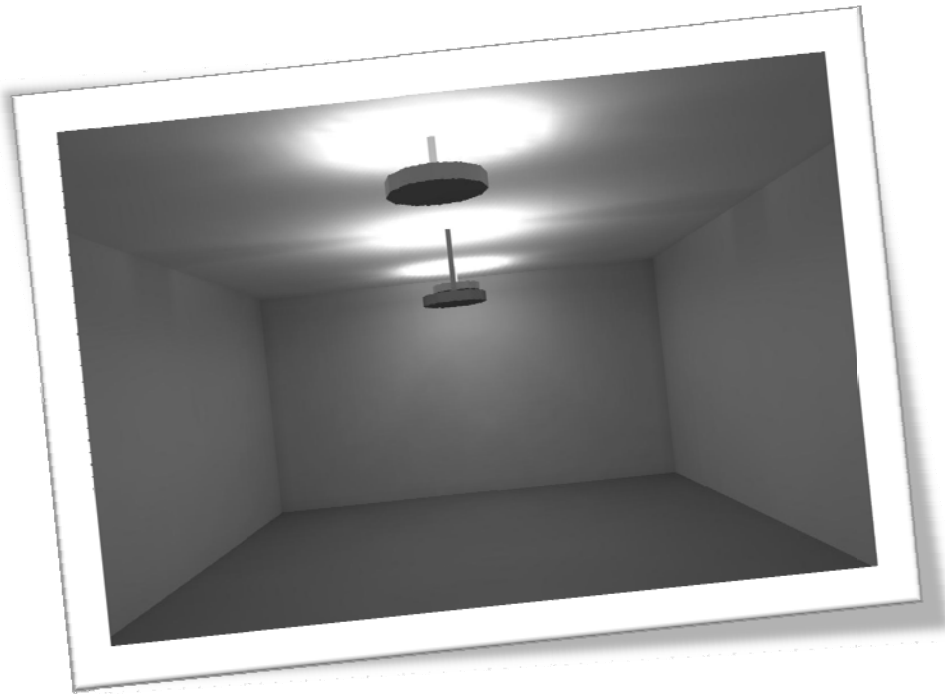
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SPACE 3| CIRCULATION SPACE| FOYER





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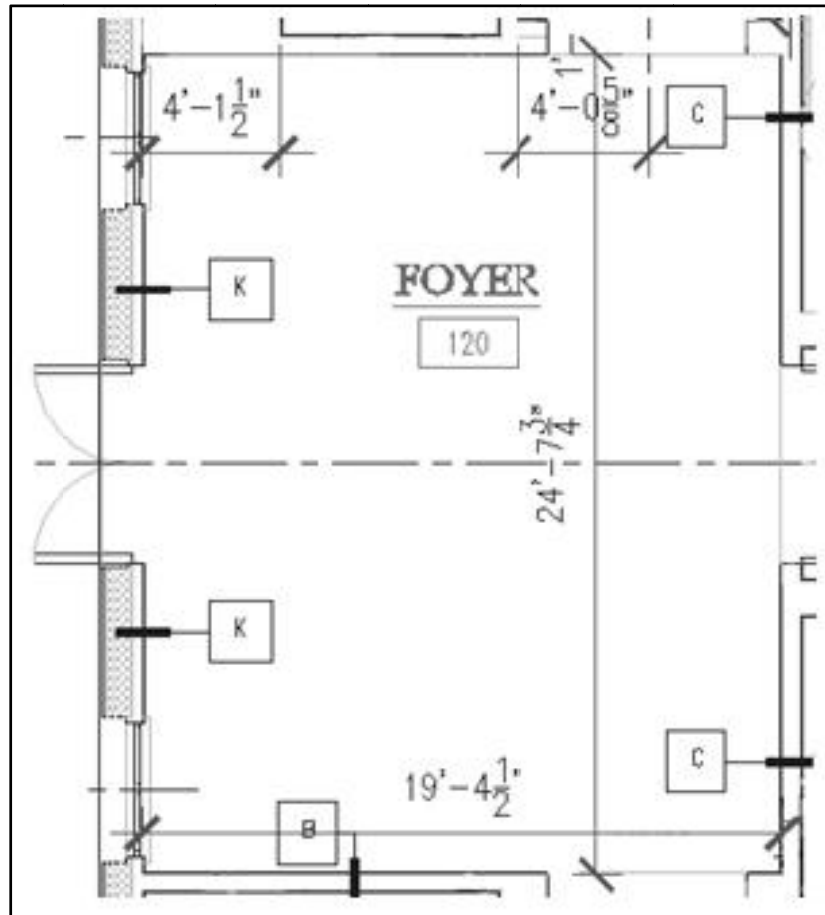
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FOYER| EXISTING SPACE CONDITIONS

DESCRIPTION OF SPACE:

The foyer is a circulation space that acts as a bridge between the Chapel and the remainder of the building. The hallways release into the Foyer's open design where the friars can gather and fellowship before they are compressed again into the entrance of the three cleansing stations and forced into the solemn, reflective atmosphere of the chapel.





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FOYER| EXISTING SPACE CONDITIONS

SURFACE MATERIALS:

SURFACE	MATERIAL	REFLECTANCE
FLOOR	CORK WITH POLYURTHANE FINISH	0.38
WALLS	PAINT	0.8
CEILING	PAINT	0.8
WINDOWS	DOUBLE PAINED WITH GLAZING	0.04
DOORS	NATURAL FINISHED WOOD	0.09



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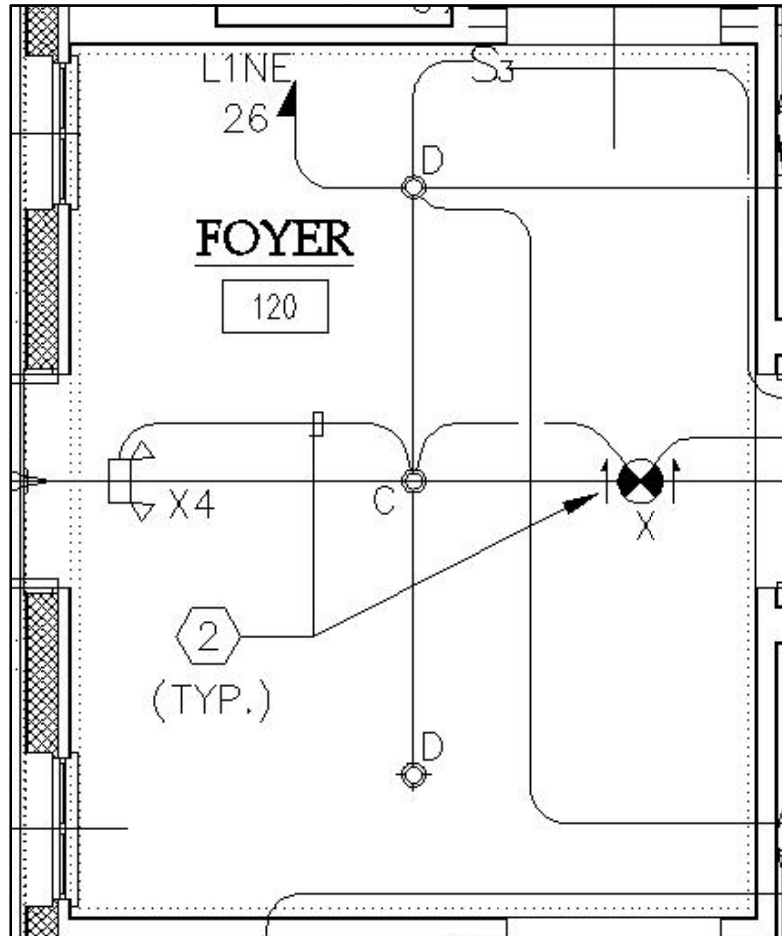
LIGHTING/eLECTRICAL oPTION

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FOYER | EXISTING LIGHTING CONDITIONS

DESCRIPTION OF LIGHTING SYSTEM:

The lighting system in this space provides adequate lighting levels for the purpose of gathering. The fixtures used are the same as those in the library, unifying the lighting design on the first floor. There is a three-way switch in this room allowing for the luminaires to be switched on from either entrance to the space.





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LIGHTING/eLECTRICAL oPTION

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FOYER| EXISTING LIGHTING CONDITIONS

LUMINAIRE SCHEDULE:

TYPE	DESCRIPTION	LAMPS	VOLT	MOUNTING	REMARKS	MANUFACTURER & CATALOG NO.
C	RUSTIC BRONZE PENDANT WITH INDIRECT GLASS BOWL	3-75W MED BASE	120	PENDANT	NONE	HINKLEY LIGHTING ITEM 4292 RN
D	RUSTIC BRONZE SURFACE MOUNT FIXTURE WITH INDIRECT GLASS BOWL	3-75W MED BASE	120	SURFACE	NONE	HINKLEY LIGHTING ITEM 4291 RN
X	EDGE LIT EXIT SIGN FIXTURE	LED	120	UNIVERSAL	NICKEL CADMIUM BATTERY	LITHONIA #LRP-GMR-120/277-ELN
X4	CONCEALED EM. LTG. UPON ELECTRICAL FAILURE, LUMINAIRE FLIPS DOWN	2-MR16	120	RECESSED	NICKEL CADMIUM BATTERY	CONCEALITE 5000 SERIES F5 50 90 RT PT NC

LIGHT LOSS FACTORS:

All light loss factors for the foyer are based on the assumption that the dirt condition is 'Clean' and the frequency of cleaning is 6 months.

TYPE	CATEGORY	LLD	LDD	RSDD	BF	TOTAL
C	VI	0.92	0.92	0.89	1.0	0.75
D	VI	0.92	0.92	0.89	1.0	0.75

CONTROLS:

This space does not utilize special or complex controls for the lighting system.

DAYLIGHT ELEMENTS:

The foyer's central location does not allow for it to take advantage of natural daylight.



kRISTIN mARUSZEWSKI

LIGHTING/eLECTRICAL oPTION

aDVISOR: mISTRICK

FOYER| DESIGN CRITERIA

ILLUMINANCE:

The illuminance level for this space recommended by the IESNA is 10 fc for the horizontal plane. The vertical plane in the Foyer is not critical and therefore, there is no recommendation for the illuminance level.

POWER ALLOWANCE:

According to ASHRAE 90.1- 2004 Energy Standard for Building's Space-by-Space method, the allowable power density for this space is 1.1 W/ft².

DIRECTION:

This space should clearly state the direction to the Chapel without a sign. The lighting levels in the Foyer should draw the Friars into the space, but then yield to the higher importance of the Chapel.

PSYCHOLOGICAL ASPECTS:

This space should get the people ready to move onto the next space. It should give them a chance to talk to each other, but not to congregate. They should be on-edge and prepared to move on. Flynn proved that this can be done by directing the light on the people. People tend to get uncomfortable when they are in the spotlight and will be inclined to move away from it.

MODELING OF FACES OR OBJECTS:

This space should allow the friars to interact with one another and recognize facial features. This should be taken into account in the lighting design.



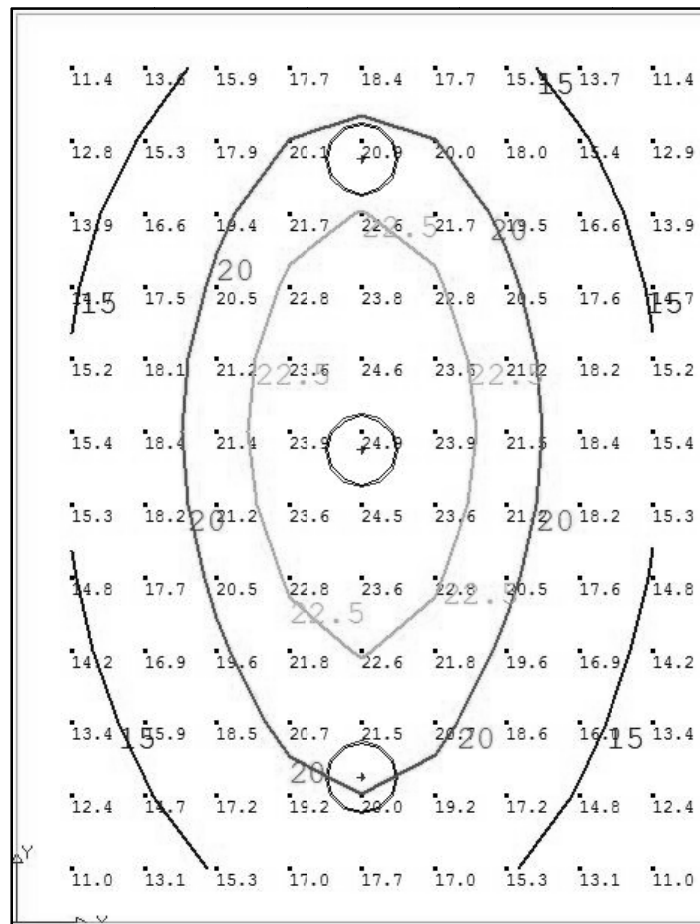
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LIgHTING/eLECTRICAL oPTION

aDVISOR: mISTRICK

FOYER | CALCULATIONS

SURFACE	RECOMMENDED VALUES	ACTUAL VALUES			
		AVG	MAX	MIN	MAX/MIN
HORIZONTAL	10 fc	18.09 fc	24.9 fc	11.0 fc	2.26 fc





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LIGHTING/eLECTRICAL oPTION

aDVISOR: mISTRICK

FOYER| EVALUATION

EVALUATION OF EXISTING LIGHTING SYSTEM:

The luminaires chosen for the foyer give the occupant a clear sense of direction. By placing the luminaires in a line, it pulls you through the corridor but brings you to a stop at the middle of the room where the pendant hangs lower into the space. The center pendant alerts the occupant to the first entrance of the Chapel. The luminaires are the same style as the ones in the library creating a unity in design throughout the first floor. The illuminance levels in this space exceed that recommended by IESNA, while still remaining under the power allowance. The incandescent lamps and higher levels of ambient light create a space that is comfortable and welcoming but that encourages you to continue to your destination.



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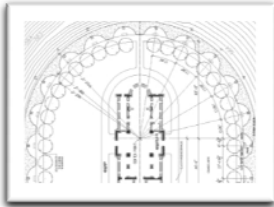
LIIGHTING/eLECTRICAL oPTION

aDVISOR: mISTRICK

FOYER| RELEVANT COMPUTER FILES

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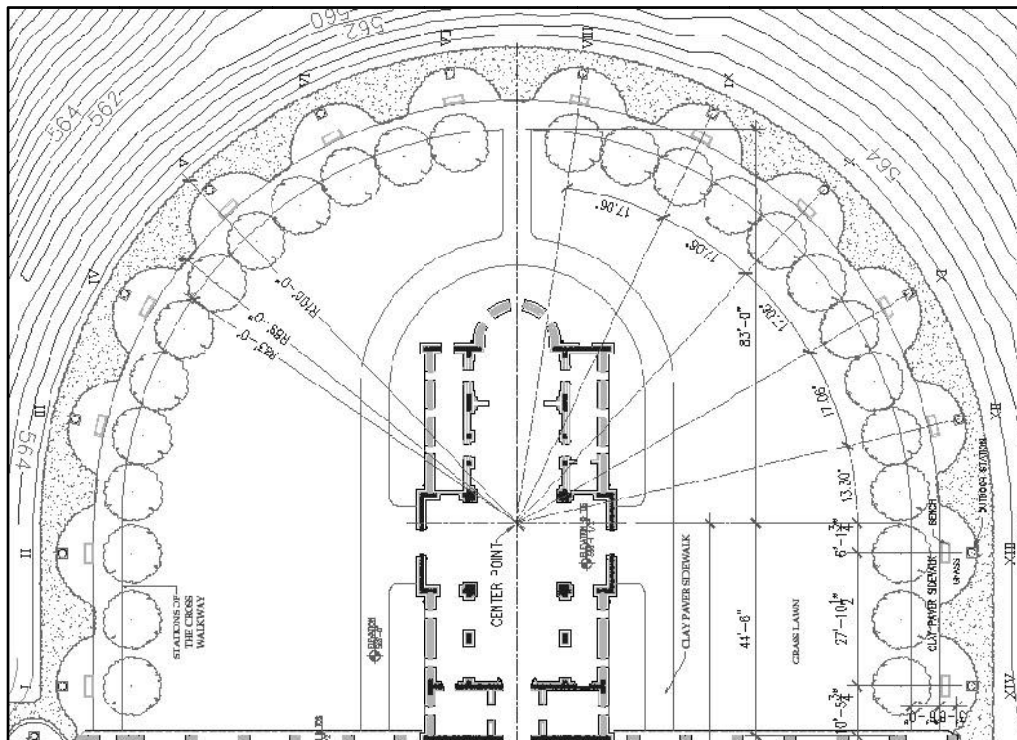
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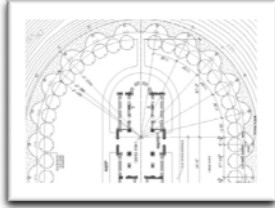
aDVISOR: mISTRICK

COURTYARD| EXISTING SPACE CONDITIONS

DESCRIPTION OF SPACE:

The courtyard is an exterior space that consists of an arced walkway outlining the shape of the Chapel. The area is well landscaped with shrubbery and statues of stations of the cross are positioned at 12 equal increments along the arc. This space is different from the other spaces because it does not have a cap on it, making it seem vast and never-ending. This is a space where God's artwork can be admired in the background. In the foreground, time can be spent reflecting on Jesus' last hours. This is a safe and secluded area used for prayer, reflection, and worship. Exits from the Chapel drop right into this space for an escape from the return to everyday life after the sermon.





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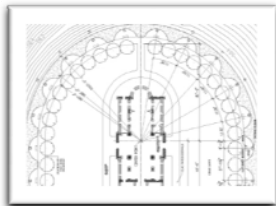
LIIGHTING/eLECTRICAL oPTION

aDVISOR: mISTRICK

COURTYARD| EXISTING SPACE CONDITIONS

SURFACE MATERIALS:

SURFACE	MATERIAL	REFLECTANCE
WALKWAY	GRASS/CLAY PAVERS	0.09, 0.22
WALLS	STONE/STUCCO	0.09
SPECIAL	STATUES	0.18



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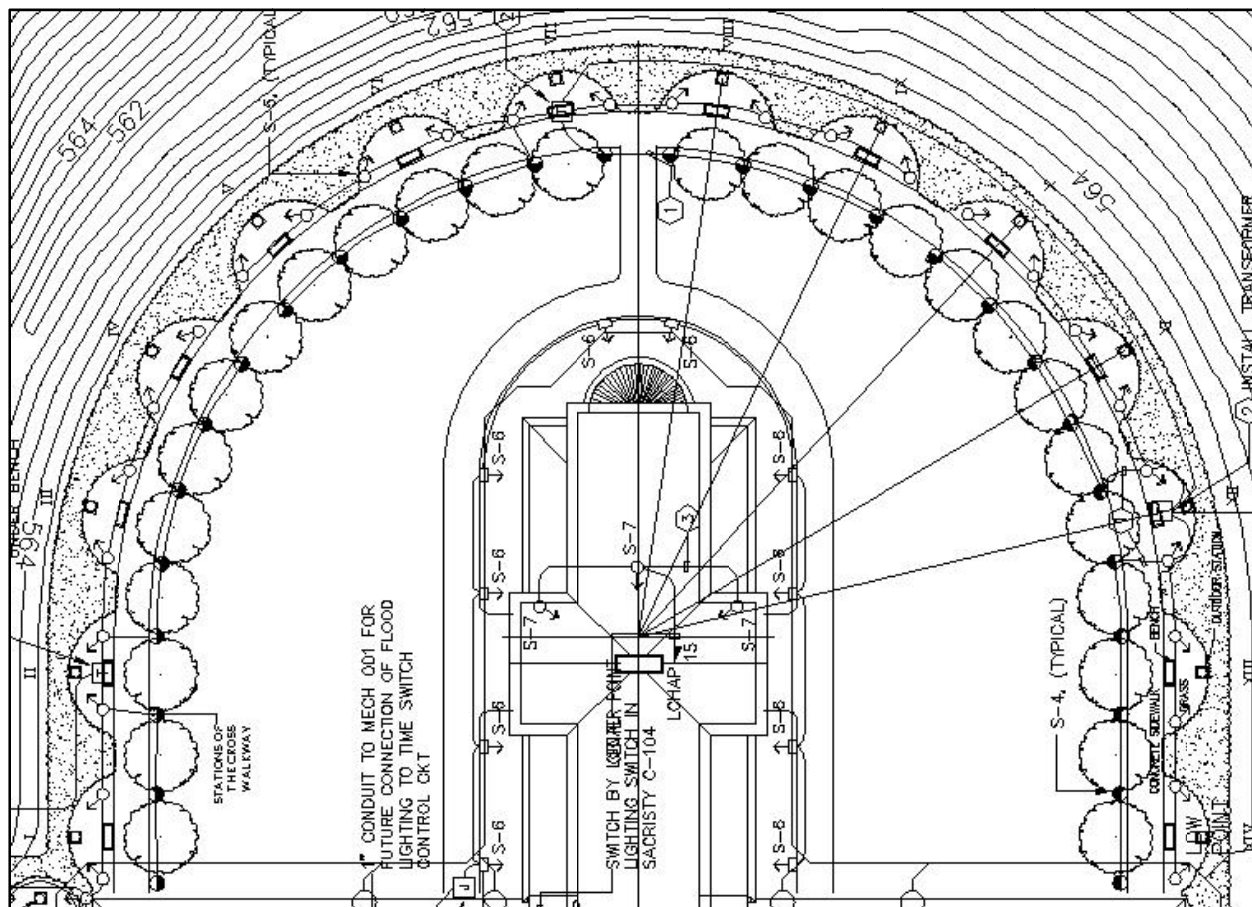
LIGHTING/eLECTRICAL oPTION

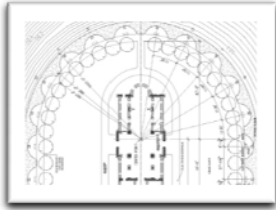
aDVISOR: mISTRICK

COURTYARD| EXISTING LIGHTING CONDITIONS

DESCRIPTION OF LIGHTING SYSTEM:

The outdoor lighting system utilizes spot lights, path lights and flood lights. Spot lights accent the statues from opposing sides providing a uniform wash over the statue and minimizing shadows. Path lights line the path to provide adequate illuminance levels for strolling in safety. Flood lights wash the façade of the Chapel accentuating the use of stone.





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LIGHTING/eLECTRICAL OPTION

ADVISOR: mISTRICK

COURTYARD| EXISTING LIGHTING CONDITIONS

LUMINAIRE SCHEDULE:

TYPE	DESCRIPTION	LAMPS	VOLT	MOUNTING	REMARKS	MANUFACTURER & CATALOG NO.
S-4	PATH LIGHTING, COPPER, ADJUSTABLE	20W	12	IN-GROUND	NONE	COOPERMOON CM700/20
S-5	SPOT LIGHTING WITH ADJUSTABLE AIMING	MR-16 35W	12	12" SPIKE	NONE	HYDREL 4516 M50 12 NSP MS12 BL
S-6	YOKE MOUNTED FLOOD LIGHT	70W MH T-6	120	LANDSCAPE	NONE	HYDREL 2100 70MT6 120 RW YM SPCA VSR SF GEB LP1 BL
S-7	METAL HALIDE SPOT LIGHT	MH 35 T6	120	ROOF SURFACE	NONE	WE-EF 6653350 FLC131

LIGHT LOSS FACTORS:

All light loss factors for the courtyard are based on the assumption that the dirt condition is 'Medium' and the frequency of cleaning is 12 months.

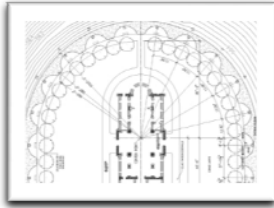
TYPE	CATEGORY	LLD	LDD	RSDD	BF	TOTAL
S-4	V	0.96	0.83	N/A	1.0	0.80
S-5	V	0.95	0.83	N/A	1.0	0.79
S-6	V	0.96	0.83	N/A	1.0	0.80
S-7	V	0.85	0.83	N/A	1.0	0.71

CONTROLS:

Daylight sensors will be used to turn on the exterior lighting.

DAYLIGHT ELEMENTS:

This courtyard is a completely outdoor space positioned on the East side of the building and will receive the morning and midday sun. The lighting should not be necessary during daytime hours.



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LIGHTING/eLECTRICAL oPTION

aDVISOR: mISTRICK

COURTYARD| DESIGN CRITERIA

ILLUMINANCE:

The courtyard has many different aspects to it. The IESNA recommends different values for each of these elements.

ILLUMINANCE	TREES	PATHS	STATUES
HORIZONTAL	3 fc	1 fc	3 fc
VERTICAL	3 fc	0.3 fc	5 fc

GLARE:

The necessity of vertical illuminance for the sculptures requires extra care to be taken to avoid direct glare. In order to avoid having to offset the upward light, the sculptures are intentionally positioned along the outer edge of the path. In this formation, light can be directed at the sculptures without penetrating into another space. The light that escapes past the sculpture just fades into the vast space that surrounds the courtyard.

POWER ALLOWANCE:

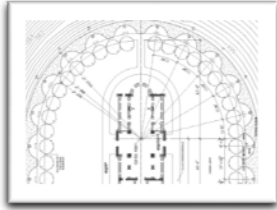
According to ASHRAE 90.1- 2004 Energy Standard for Building's Space-by-Space method, the allowable power density for this space is 0.2 W/ft² for the Building Façade and 1.0 W/linear ft for the walkway.

POINTS OF INTEREST:

Accent lights will be required to draw attention to the focal pts in the courtyard. These focal points are the 12 sculptures of the stations of the cross. These stations are the highest priority in the hierarchy of this space and thus should have the highest lighting levels, which can be achieved through accent lights.

PSYCHOLOGICAL ASPECTS:

The impression or mood that is necessary for this space to successfully portray its purpose is spaciousness. The purpose of the courtyard or outdoor space is to bring to the friar's attention the significance of Christ's path to the cross.. This impression should be easily accomplished in this space since it is an exterior space that has sculptures of Jesus' sacrifice placed in the foreground with God's artwork stretching on forever in the background.



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LIGHTING/eLECTRICAL oPTION

aDVISOR: mISTRICK

COURTYARD| DESIGN CRITERIA

LIGHT POLLUTION:

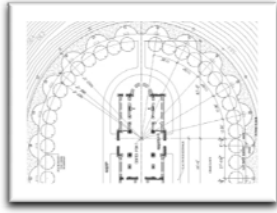
Cut-off fixtures should be used to prevent light from spilling into neighboring spaces. This courtyard is positioned around the Chapel which will not be utilized at night, so this is not a high concern. However, it is important to efficiently use the lamp output since this is an outdoor space and thus lacks the opportunity of reflected light.

SECURITY AND SAFETY:

This space should have high enough illuminance levels that the friars are able to see obtrusions in their path as well as differences in elevation. As well, the light levels should be adequate to provide a feeling of security in the courtyard.

APPEARANCE OF SPACE AND LUMINAIRES:

This is a natural space making this the most important of all the spaces in the Friary. It is the least marred by human hands and the closest to God's original artwork. Thus, the luminaires chosen should blend in with the surroundings.



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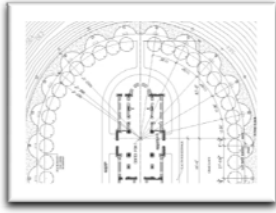
LIGHTING/eLECTRICAL oPTION

aDVISOR: mISTRICK

COURTYARD| EVALUATION

EVALUATION OF EXISTING LIGHTING SYSTEM:

The courtyard's lighting system fulfills all of the requirements of the space. It takes into account all of the tasks and points of interest of the space. The flood lights on the building boast the stone façade while the spot lights capture your interest on the sculptures. Meanwhile, the path lights lead you to each destination feeling safe and secure. The light distribution in the space is all outward facing so as not to create direct glare. The main concern with this lighting system is the light pollution on the neighboring plot of land. St. Francis Friary's site is located in a secluded area in Hanceville, Alabama, however, releasing the lighting designer of this concern.



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LIGHTING/eLECTRICAL oPTION

aDVISOR: mISTRICK

COURTYARD| RELEVANT COMPUTER FILES

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