

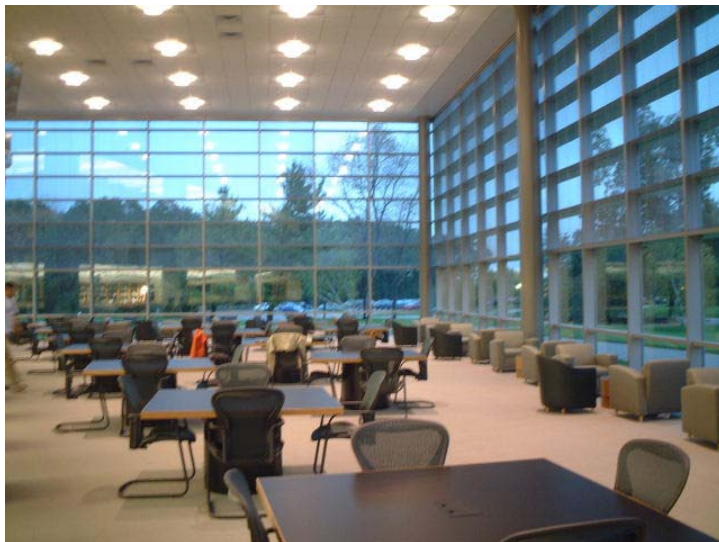


Library Stacks/Reading Room

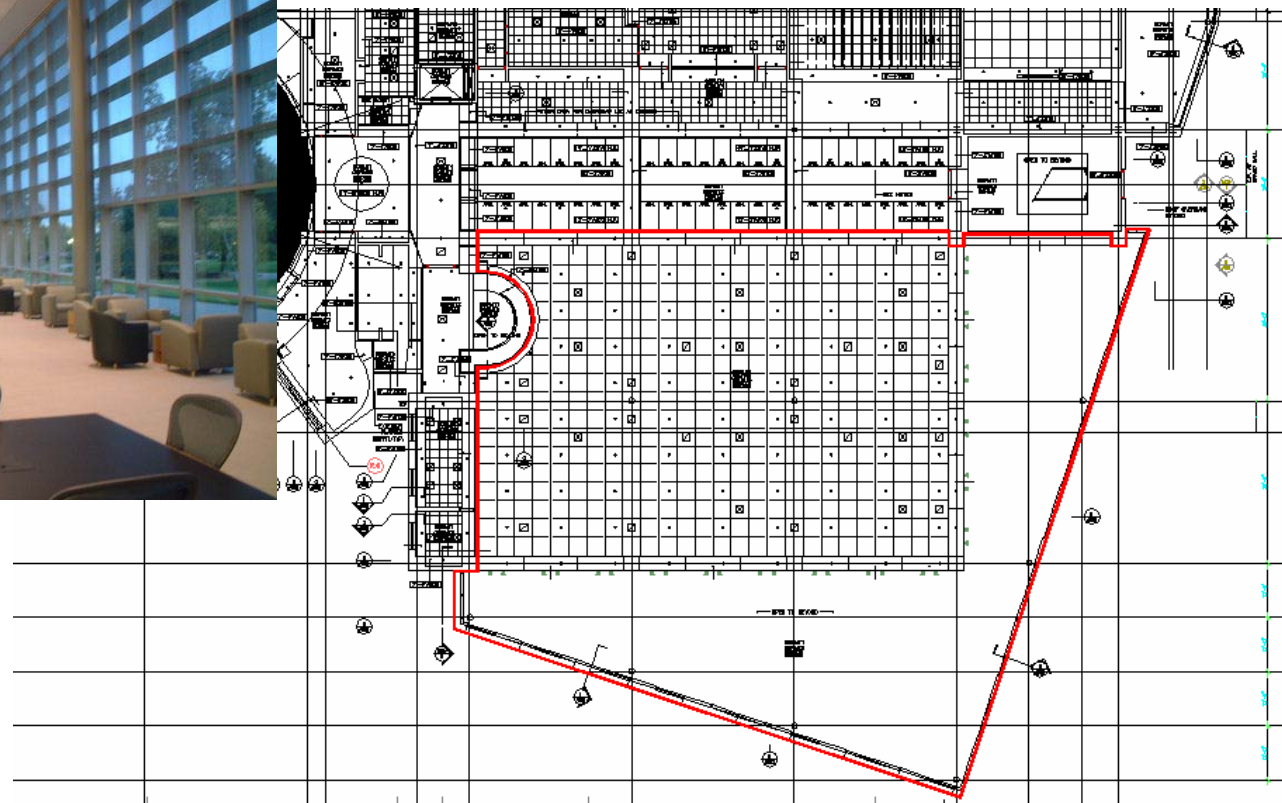
Overview

The library for Bryant College is the largest space in the George E. Bello Center. This space not only houses all the school's books and reference material, but there are computer terminals set up for students to use.

The library stacks area is connected openly with the reading room, which borders the outside of the building. The reading room is a space where students and faculty can sit, relax, and do work at the same time. The space is unique in that it is open to the second floor, and can be looked down upon from openings on the 2nd level.



|| The Reading Room ||





Library Stacks/Reading Room

Space Criteria

- ⌘ *uses:* reading tasks
 writing tasks
 computer use
- ⌘ *materials:*

floor.....carper.....	21% reflectance
walls.....synthetic plaster.....	52% reflectance
walls.....gypsum wall board.....	52% reflectance
walls.....wood.....	52% reflectance
windows.....glass.....	12% reflectance
ceiling.....ceiling tile.....	66% reflectance
- ⌘ *design goal:* provide enough illuminance to perform visual tasks in a library space, while maintaining a presence that will help give more life to the building, as viewed from the exterior.
- ⌘ *power goal:* 1.5 W/ft²

Illuminance Criteria

⌘ <i>Work plane:</i>	<u>Library Stacks</u>	<u>Reading Room</u>
- horizontal	30 fc	50 fc
- vertical	30 fc	10 fc



Library Stacks/Reading Room

The Design

≠ Conditions

This space is in use during all hours of the building's operations. The curtain wall encompassing the reading room is a strong architectural element of the building, and helps to create the body of the building. Like the grand hall, the lighting system of the stacks and reading room should be kept on at all times. The light produced from these systems provides as much aesthetic body and support as do the rest of the exterior materials.

≠ Concept

A strong appearance is crucial in this space, as these two rooms create the soul from which the building's energy comes from. From the outside, this space is almost completely visible and a design emphasis should be put on the cleanliness of the installation. Even though a strong appearance is important, it is equally important to create an environment that is both comfortable for the students to dwell in, as well as attentive enough to properly take care of the work they have.

≠ Design Assumptions

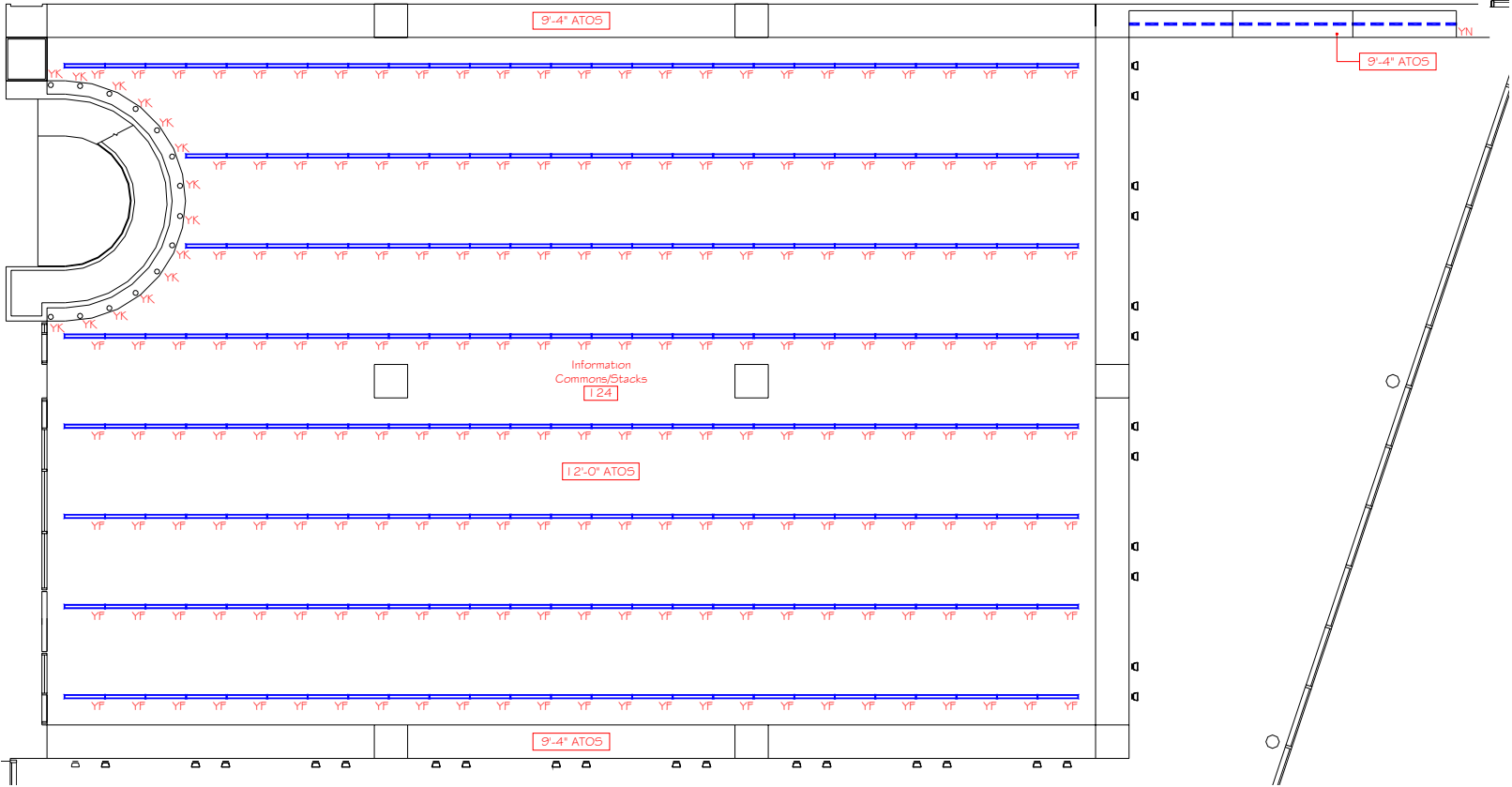
The bulk of the school's library is located on the 2nd floor of the building, directly above the library stacks room on the 1st floor. The stacks located on the 1st floor stand only 3ft. tall, allowing for a more open environment. Additionally, the computers in this space are all outfitted with flat screen monitors, which eliminate most of the glare issues encountered by rounded screens.



Library Stacks/Reading Room

The Design

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First Floor Reflected Ceiling Plan



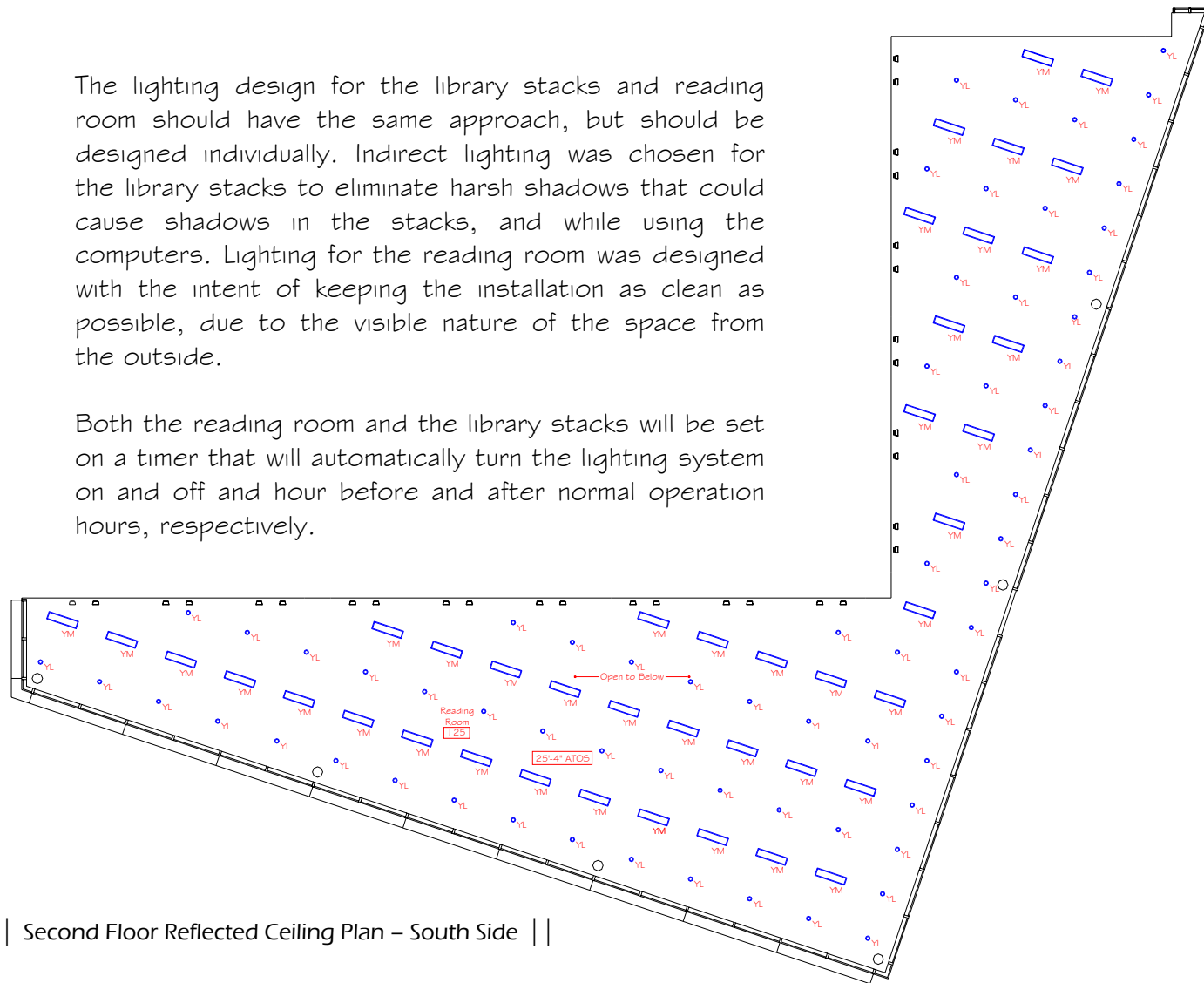
Library Stacks/Reading Room

The Design

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The lighting design for the library stacks and reading room should have the same approach, but should be designed individually. Indirect lighting was chosen for the library stacks to eliminate harsh shadows that could cause shadows in the stacks, and while using the computers. Lighting for the reading room was designed with the intent of keeping the installation as clean as possible, due to the visible nature of the space from the outside.

Both the reading room and the library stacks will be set on a timer that will automatically turn the lighting system on and off an hour before and after normal operation hours, respectively.



|| Second Floor Reflected Ceiling Plan – South Side ||



Library Stacks/Reading Room

Luminaire Schedule

Luminaire Schedule - Stacks & Reading Room										
Label	Description	Manufacturer	Mounting	Lamp	CRI	CCT	Ballast Factor	Input Watts	No. Used	Watts
YK	3' long linear fluorescent strip	Legion	Surface	GE F21W/T5/835	85	3000K	1.1	24	26	686
YL	7" diameter open compact fluorescent fixture	Erco	Recessed	(2) Philips CFQ26W/G24q/830	82	3000K	0.96	52	68	3395
YM	1' x 4' recessed direct, louvered, fluorescent fixture	Zumtobel	Recessed	(2) Philips F54T5/830/HO	85	3000K	1	108	42	4536
YN	7-3/4" x 48-11/16" recessed linear wallwasher	Engineered Lighting Products	Recessed	Philips F28T5/830	85	3000K	0.98	31	7	213
YF	Pendant 4" x 48" T5HO fixture	Gammalux	Suspended	Philips F24T5/830/HO	85	3000K	1.02	24	194	4749
									Total Watts	13579
									Area [ft ²]	13191
									Power Density [W/ft ²]	1.03



Library Stacks/Reading Room

Light Loss Factors

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Below are the light loss factors for the reading room and the library stacks.

The following equations were used in the calculations:

$$LLF = LLD \times LDD \times RSDD$$

$$RCR = [5 * (L+W)] / (L * W)$$

Luminaire LLF Table - Reading Room						
Label	LLD	LDD	Cleaning Interval	Maintenance Category	RSDD	Total LLF
YM	0.90	0.95	6	I	0.98	0.8379
YN	0.95	0.95	6	II	0.98	0.8845
YF	0.95	0.95	6	I	0.98	0.8845
RCR = 3.4						

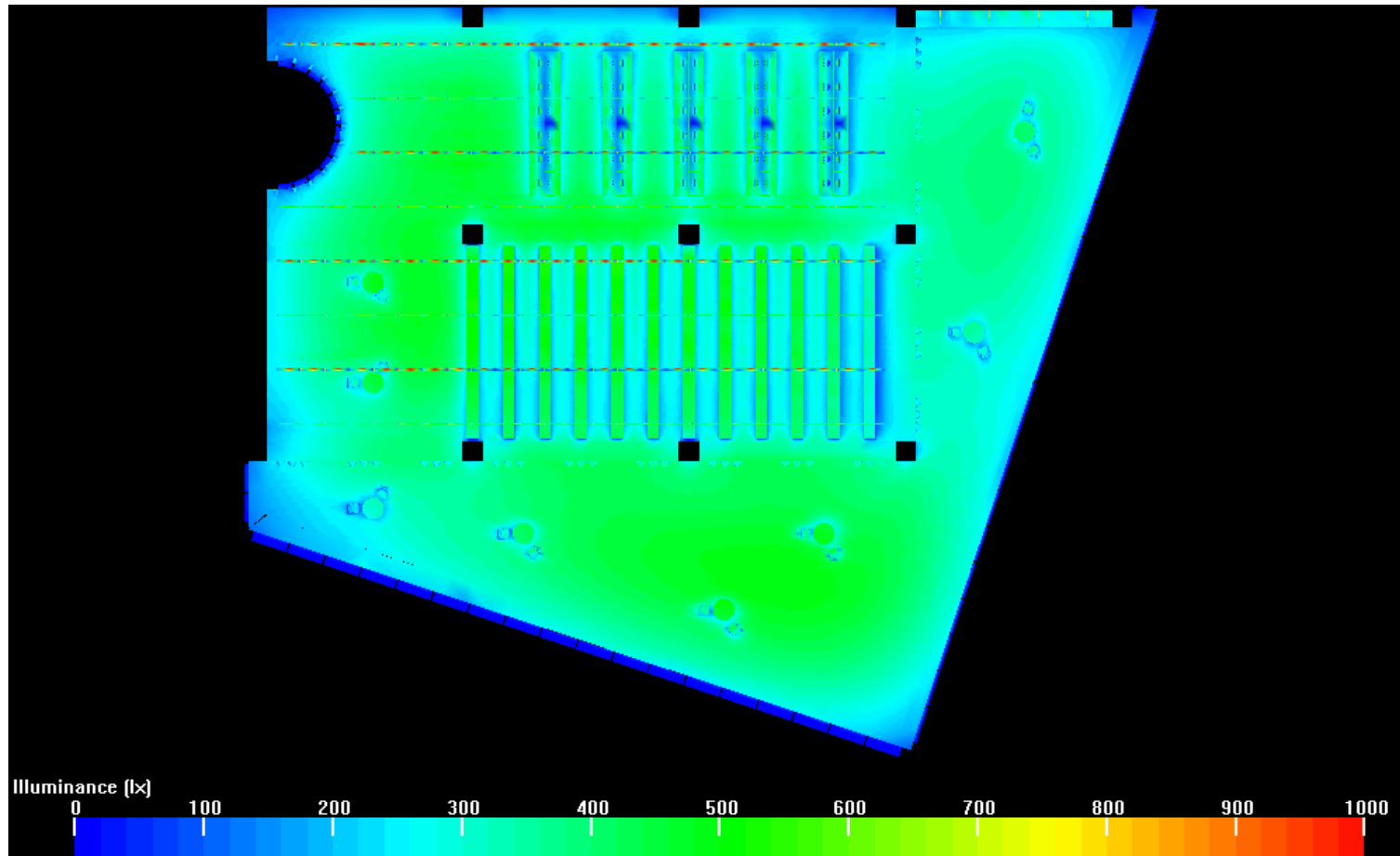
Luminaire LLF Table - Library Stacks						
Label	LLD	LDD	Cleaning Interval	Maintenance Category	RSDD	Total LLF
YF	0.95	0.92	6	VI	0.92	0.8041
YK	0.95	0.96	6	I	0.98	0.8938
YL	0.90	0.95	6	I	0.98	0.8379
RCR = 1.37						



Library Stacks/Reading Room

The Design

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Uniformity is an important issue when *designing library spaces*. It is important to create adequate levels of illuminance, while not flooding the space with too much light. The lighting systems designed for both the library stacks and the reading room created fairly even illuminance levels along the workplanes, which helps bring the two spaces together as one.



Library Stacks/Reading Room

Library Stacks

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Indirect pendant were used to light the library stacks space. The same Gammalux pendant fixtures used in the classroom are used in the library stacks to keep a level of consistency throughout the building's lighting design. These fixtures kept the space open, and the work plane uniformly lit, which was appropriate for both the small stacks and the computer terminals.

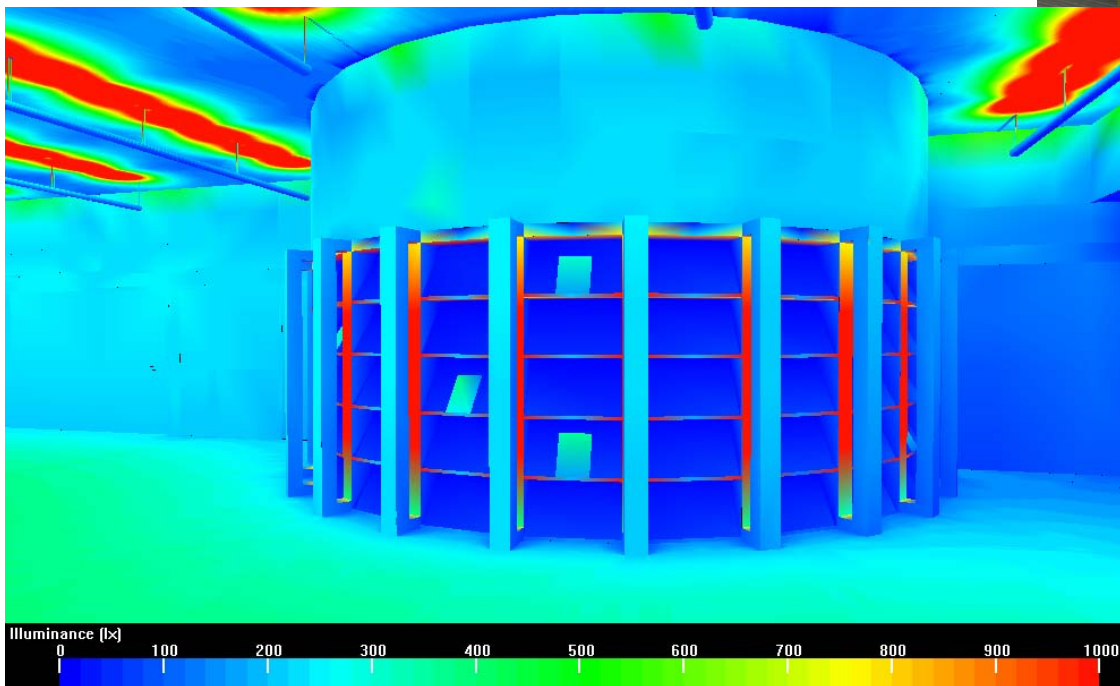
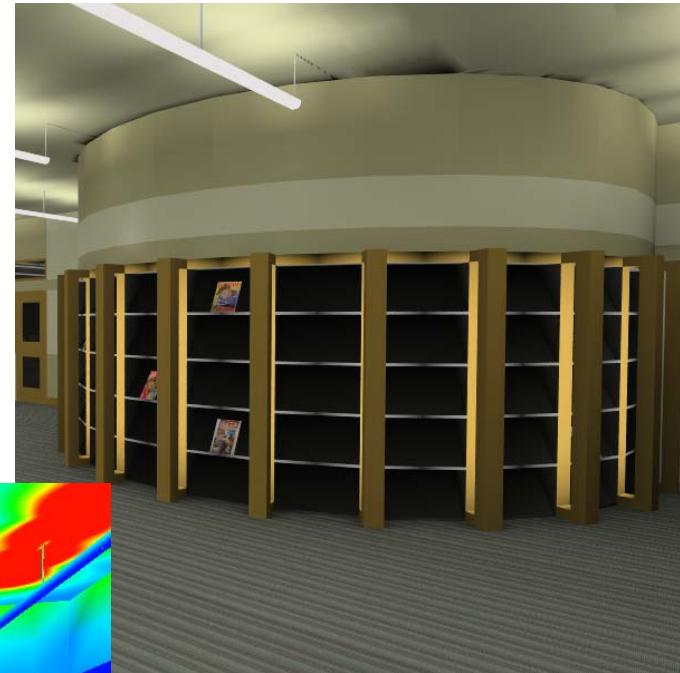


Library Stacks/Reading Room

Library Stacks

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The magazine rack, located on the west side of the library stacks room, has enclosures built into the design of the rack. These enclosures are made for linear fluorescent sources. Two 3ft. long T5 linear fluorescent fixtures were mounted in each enclosure to directly light the racks.



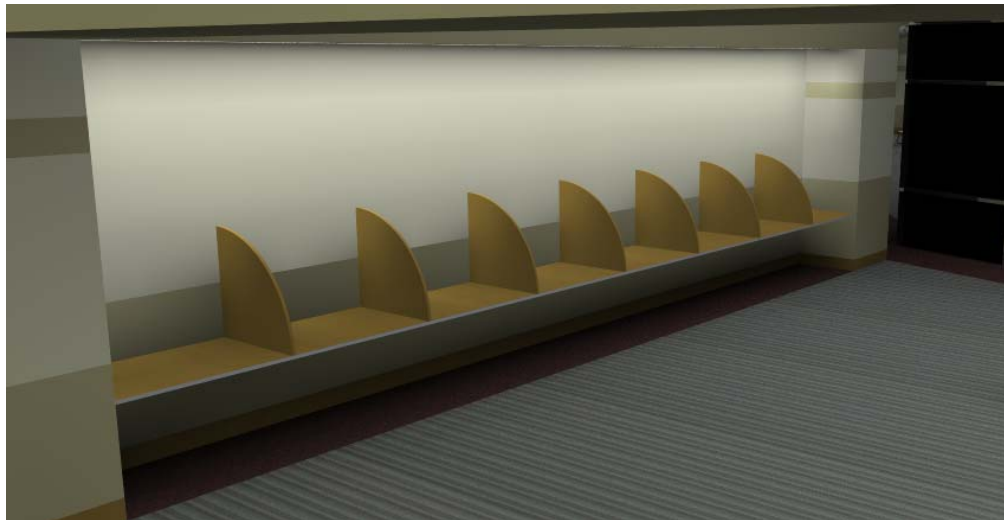


Library Stacks/Reading Room

Reading Room

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The desks located in the north side of the reading room are for general use by the students. A recessed linear fluorescent wallwasher was mounted in the ceiling above the desks. They serve a dual purpose of washing light down the wall, as well as providing task lighting on the work surface.





Library Stacks/Reading Room

Reading Room

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The body of the reading room is lit with alternating rows of 1' x 4' parabolics and recessed 7" diameter open downlights. The parabolics use two 54W T5 high output lamps which are circuited separately for each fixture. In combination with the compact fluorescent downlights, a smart switching system was employed in conjunction with the control system in this space.





Library Stacks/Reading Room

Reading Room

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As previously mentioned, the fixtures in the reading room will be controlled by a smart switching system. This switching system will be used in conjunction with a photocell sensor set up on an integral-reset system. The photocell will be centrally located on the ceiling of the Reading Room, and will be mounted with a shield. This shield will block any direct sunlight from hitting the sensor, which would cause the system to not work as designed. A switching system was chosen over a dimming system because it would work well with the fluorescent fixtures chosen, and it would also create financial savings in the initial costs and overall maintenance of the system. The switching system will be controlled by a Lutron Grafik Eye 3000 system.

Switching Configuration:

Fixture On	Daylight Illuminance Level
none	> 50 fc
CFL Downlight (YM)	35 fc
1 Lamp in Parabolic (YN)	20 fc
all on	< 20 fc

*the zones are to sequentially switch on

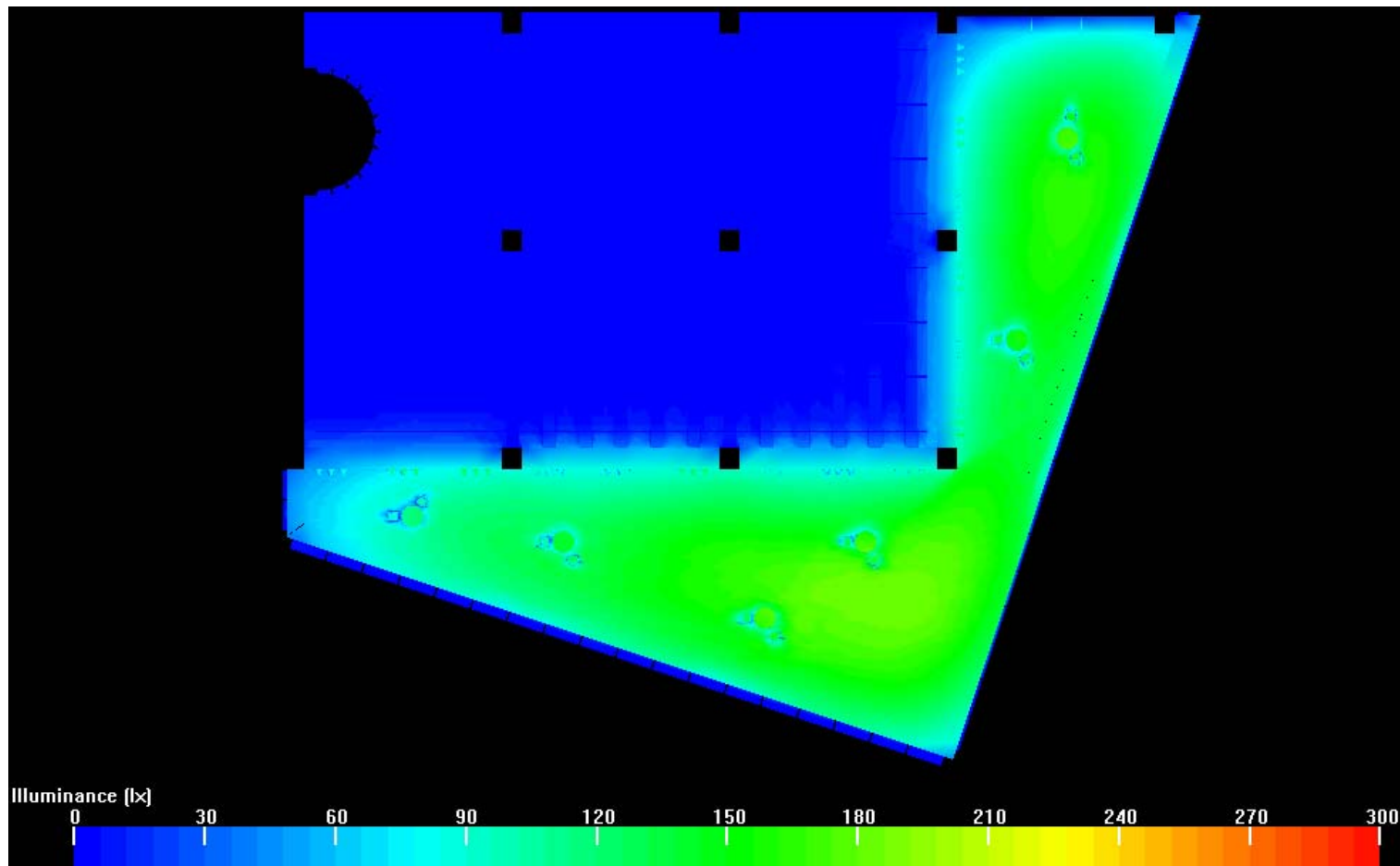
The following pages show illuminance levels for the different combinations of lights used in this smart switching system



Library Stacks/Reading Room

Reading Room

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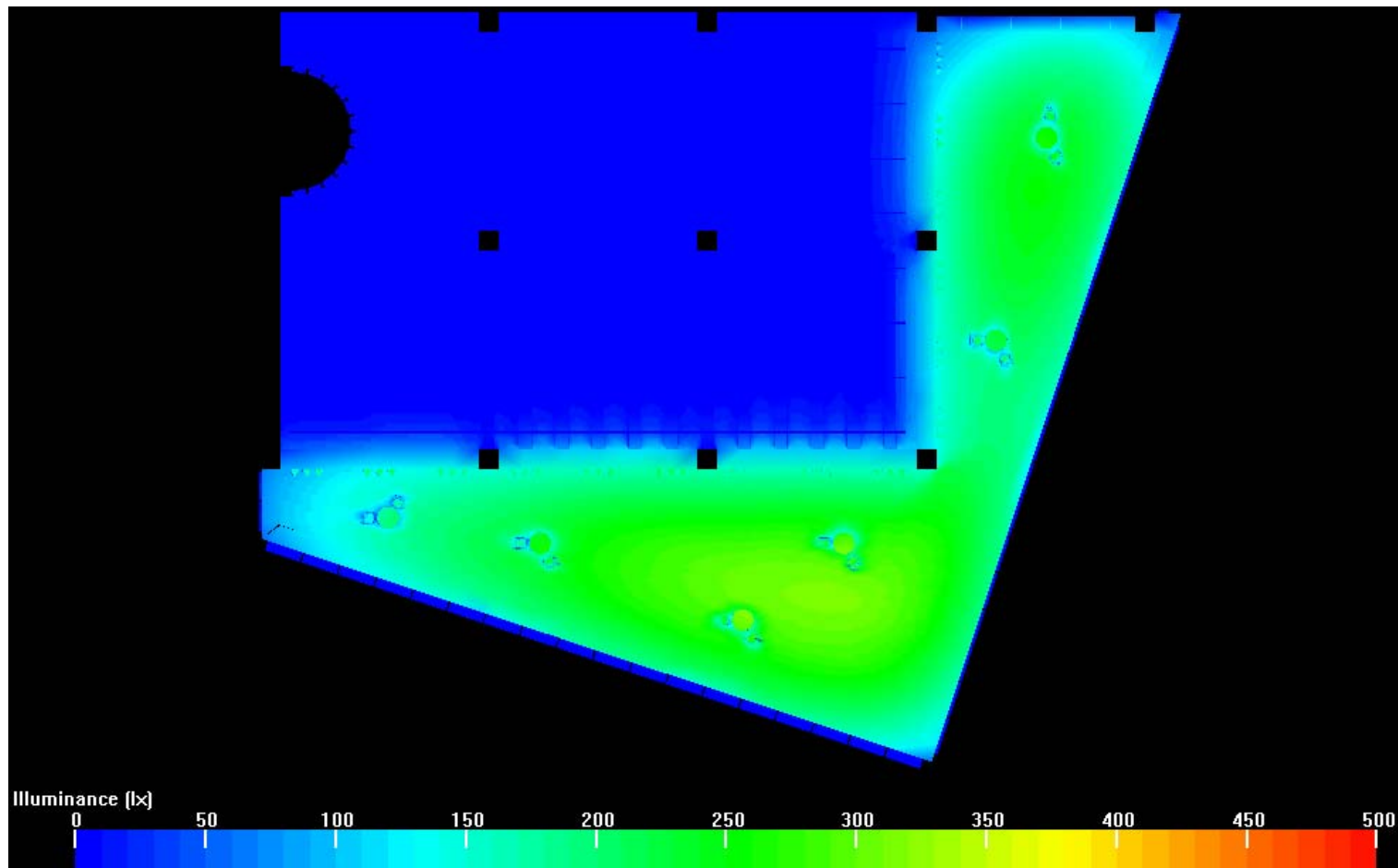
|| Illuminance of Reading Room with downlights only ||



Library Stacks/Reading Room

Reading Room

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|| Illuminance of Reading Room with parabolic fixture using one lamp and downlights ||