



Lighting Depth

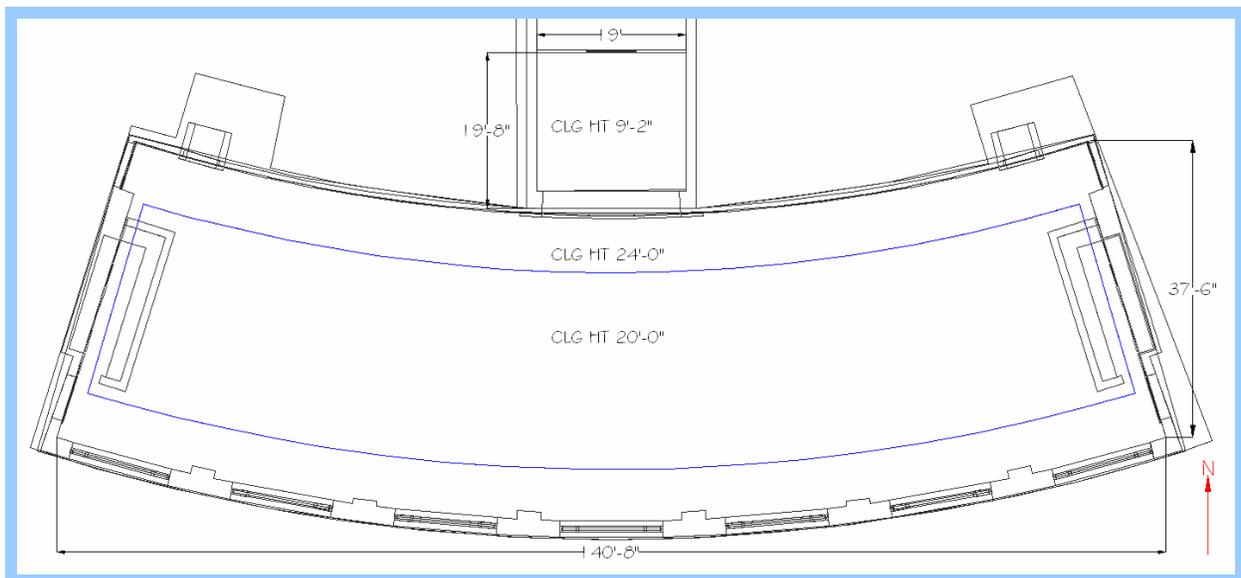
Club Room

Overview

The Club Room is meant specifically for special gatherings of VIPs, special donors, and premium shareholders of Boston University. Located above the main lobby, the Club Room is situated on the south end of the Arena on the concourse level. The two story room is a multipurpose space designed for luxury, with floor to ceiling windows, elegant furniture, and numerous decorative elements. The expansive 5,600 square-foot space features a bar, video screens, and kitchen support areas with a flexible floor plan that can accommodate up to 400 guests. The lighting plan will need to be flexible and user friendly with the constant usage changes.

Floor Plan

Generally, the Club Room is used as a VIP lounge with no definitive furniture plan. The main entrance to the space is located off the concourse on the North end of the room. Situated on the east and west sides are full cocktail bars with flat screen monitors located directly above the bar, while four other large flat screen televisions are located on the North and South walls. All furniture in the space is more than likely to alter depending on the function; there are couches with coffee tables, high tables with stools, a bar with stools, as well as typical height table and chair sets. The only permanent features within the space are the flat screen monitors and wall hangings in the entrance corridor.





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Surface Characteristics

The Club Room has a rich color palette, with warmer earth tones throughout the space. Most of the walls are covered with wood paneling and in the absence of the paneling, the walls and ceiling are painted eggshell white. Tan-grey carpets and terrazzo tiles make up the floor covering. The floor to ceiling windows are clear double-pane insulating glass with a standard low E-coating, and in the case of presentations or events on the television the windows are equipped with black-out roller shades that have an interior color similar to that of the painted walls/ceiling.



The Visible Light Transmittance of the floor to ceiling windows for a typical Low-E is 0.72 and the Solar Heat Gain Coefficient is 0.41. The Visible Light Transmittance of the floor to ceiling windows for a clear double pane is 0.81 and the Solar Heat Gain Coefficient is 0.76.

Design Criteria

Main Goal: To generate a design that utilizes daylight and provides energy efficient electrical lighting that creates a comfortable, luxurious feeling for the “high class” guests. The lighting should not be based on a specific furniture plan except for the main entrance wall hangings and bar area lighting. This system should be very flexible and user friendly.

Appearance of the Space and Luminaires: The Club Room is meant for very exclusive members and should have an elegant feel to separate itself from the rest of the Arena. Luminaires should be hidden as best as possible and/or more expensive decorative fixtures should be used for aesthetics, more than purely functional. The space is multifunctional without a definitive furniture plan, therefore the lighting layout should be adjustable and accommodating to different events.



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Color Appearance: The space is filled with earth-tone colors such as browns, creams, tans, and grays. The luminaires should have a low color temperature in order to avoid washing out the wood panels and warm colored walls.

Daylighting Integration and Control: Photo sensors or time controlled fixtures should be implemented on a portion of the fixtures. The large south-facing windows will allow for plenty of natural light during the day. Since the space is not used on a daily basis it is not imperative to have photo sensors. During evening hours, the space could be lit by warm lights and fixtures replicating candles.

Direct Glare: The 22' ceiling will eliminate most direct glare issues from recessed fixtures. Any fixtures mounted near the horizontal plane should have a frosted or decorative covering and avoid any direct bulb luminaires.

Light Distribution on Surfaces: The typical feeling throughout the space should be positive and relaxed. This can be created by using soft direct light and uneven light distribution in the peripheral field of view. During formal evening gatherings the same feeling should carry over but with a slightly different lighting scene. More irregular light distribution should be utilized. The cove could be used to create uneven highlights on the walls while using decorative and soft downlights throughout the rest of the space.

Light Distribution on the Task Plane: Because the room is an open plan, the lighting should have the capability to light particular reading (newspaper, menus, etc), conference, and event areas. There are tables of all different heights and sizes that can be arranged in many different ways, so in the event that a conference is taking place or guests are reading/writing, a lighting system should be implemented to accommodate to the correct light levels and uniform distribution on the given task plane.

Luminances of Room Surfaces: Windows are going to be “bright spots” during the day, but there is no real VDT use so keeping every other surface uniform is reasonable. There are no overhangs for the windows and blackout shades can be used in the event of watching the flat screen monitor mounted opposite the windows.

Modeling of Faces and Objects: This is one of the more critical design criteria for the Club Room space because it becomes very important for quality facial modeling during special events. Daylighting helps with vertical illuminance, but during the evening hours there should be multi-directional light. Any down-lighting used in the space will be reflected down to the “human plane” which will help with vertical illumination of the faces.



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Points of Interest: Special considerations should be made in order to illuminate the bar area, wall hangings, ornamental objects, and the curved walls. The fixtures should bring attention to these specific objects, but not the fixtures themselves.

Reflected Glare: Assuming the table tops have a matte finish, reflected glare should be at a minimum. Want to avoid any reflected glare from luminaires off bar counter and video screens. The large windows may cause glare issues on the picture frame glass as well as the video screens mounted on the walls opposite the window.

Shadows: Shadows should not be much of a problem in this space. Multidirectional light will minimize facial shadows.

Sparkle/Desirable Reflected Highlights: During evening events the sparkle of the large windows and/or reflected highlights off the wood paneling may be desirable, but not important. Sparkle off the luminaires is also a desired attribute. For banquet type events, giving the entire space a “classy”, candle-lit or star-lit effect could be a creative part of the design.

Surface Characteristics: There is a very rich color palette in the space with more expensive furniture and architectural elements such as the wood paneling on the walls, so the lighting should focus on the earth tones and grains of the wood.

System Control and Flexibility: The Club Room is an important space so there can be a more complex control system with day light integration and special effects for different types of events.

Special Considerations: The space can be used for multiple purposes with different furniture layouts as well as varying light levels. The location of the controls should also have special consideration and keep out of public sight.

Horizontal Illuminance: The peak should be about 30fc for conference/ workshop type events and dimmed down for lounge/social gatherings.

Vertical Illuminance: There should be brighter illumination on points of interest, and maintain a reasonable illuminance in the space for facial recognition.



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Design Concept

The Club Room is a very versatile space with an elegant touch. The room was designed to give the VIPs, premium shareholders, and special donors of Boston University a space of luxury separated from the general public. Located on the South end of the Arena, the Club Room receives sun throughout the day through the 20 ft floor to ceiling windows that expand the entire south side. Opposite the windows, the wall is covered with beech wood panels. Other decorative elements include large wall hangings in the entrance corridor, large flat screen televisions, cocktail bars, and a drop ceiling.

When beginning the lighting design for this space, the most important features I want to include are flexibility and user friendly controls. Because the space can be used for daily lounging, sport event viewing, nightly formals, and/or informal social gatherings, the lighting needs to accommodate all of these needs as well as make it simple for the users to control. After thorough research the Lutron Grafik Eye 4000 seemed to be the best control system for this space. With a flexible control system, I was ready to begin the lighting design.

The overall lighting concept is to create a space home-away-from home for the special guests. This area is “their” space and they should feel welcome and warm at all times. There should also be a touch of elegance in the fixtures. The lighting should not only provide adequate light levels, but should also provide a decorative element within the space. Since the height of the ceiling is about 20ft, the best way to provide lighting on the workplane for possible reading is through a downlight fixture. Inner-mixed with the downlights could be decorative indirect, but efficient pendants. In order to highlight and bring out the texture of the wood-panel wall a wall washer may be used that also creates movement itself.

Around the bar area, decorative and more colorful fixtures will be used. Behind the bar, a linear-recessed LED fixture will highlight the liquor bottles from below. The fixture will be on a slow color changing sequence that will rotate through the rainbow. Directly above the bar, decorative pendants will be used. In the entrance corridor, the main goal is to lead the guests directly to the larger Club Room space. On each side of the corridor, small picture lighting fixtures will highlight the wall hangings. Down the center of the corridor, small downlights that provide just enough light to walk will be used, but the intent is to keep the large room much brighter than the corridor in order to lead people’s attention to the more important, larger space.

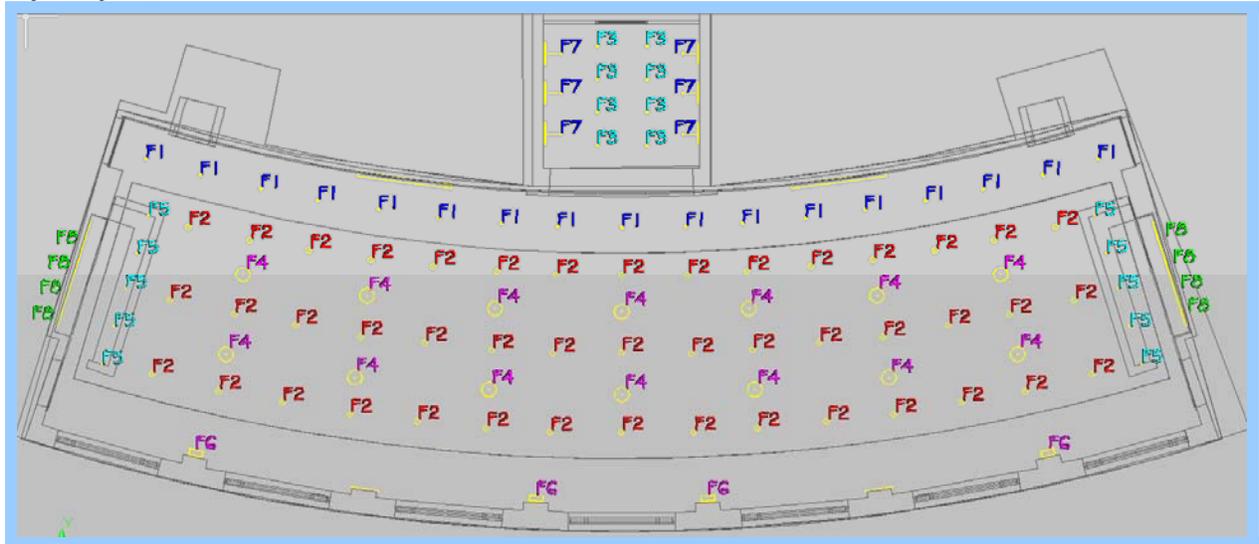
The large windows will be equipped with black out shades in the event the large screen televisions are being used. Daylighting will be an important element within the space but will not directly control the electric lighting.



Lighting Depth

Luminaire Plan

Lighting Layout



Luminaire Images





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Luminaire Schedule

Label	Description	Catalogue NO.	Lamp			Ballast		Voltage	Fixture Qty.
			NO.	Type	Watts	Type	Lamps		
F1	Recessed wallwash, Low Voltage Halogen	ERCO 22415.023	1	T4 75W 12V GY6.35 2850K Min CRI 82	75	N/A	N/A	120/12	17
F2	Recessed Compact Fluorescent Downlight	ERCO 22227.023	2	CFM 32W GX24q-3 3000K Min CRI 82	32	Electronic Dimming	2	120	45
F3	Recessed Low Voltage Halogen Downlight	ERCO 22403.023	1	T4 50W 12V GY6.35 3000K Min CRI 82	50	N/A	N/A	120/12	8
F4	Compact Fluorescent Pendant with a Natural Spanish Finish	Visa Lighting CP1310-2F39-SA-PB-TL	2	F39BX/SPX30 3000K Min CRI 82	39	Electronic Dimming	2	120	14
F5	Compact Fluorescent Decorative Pendant	Light Concepts 11990-GW	1	CFQ13T35/G24Q 3500K Min CRI 82	13	Electronic Dimming	1	120	10
F6	Compact Fluorescent Decorative Wall Sconce	Visa Lighting CB3616-2F13-SA-PB-TL	2	F13BX/ECO/GX23 3000K Min CRI 82	13	Magnetic	2	120	4
F7	Accent Picture Lights	Halo Lighting LZR800SL	1	20W MR16 12V 2900K Min CRI 82	20	N/A	N/A	120/12	6
F8	Recessed LED Strip Accent Lights	SaVi Accent 300(40.75")	45/ft=150/fixt.	Red, Green, & Blue LEDs	3.5/ft=11.67/fixt	N/A	N/A	120	8

Light Loss Factors

Luminaire Label	Maintenance Category	LLD	LDD	RSDD	BF	Total LLF
F1	IV	0.95	0.94	0.98	-	0.875
F2	IV	0.84	0.94	0.98	0.95	0.735
F3	IV	0.96	0.94	0.97	-	0.875
F4	VI	0.88	0.93	0.9	0.95	0.7
F5	II	0.84	0.97	0.94	1	0.766
F6	VI	0.86	0.93	0.9	1.02	0.734
F7	I	0.98	0.96	0.97	-	0.913
F8	V	1	0.93	0.98	-	0.911

Assumptions: 12 month cleaning interval and a very clean environment.

Power Density

Label	Qty	Watts	Total Watts
F1	17	75	1275
F2	45	67	3015
F3	8	50	400
F4	14	80	1120
F5	10	18	180
F6	4	32	128
F7	6	20	120
F8	8	11.67	93.36

Total: 6331.4

Sq Ft: 5600

Power Density: 1.1306

ASHRAE 90.1 Power Density Requirements: Using Table 9.3.1.2, Lighting Power Densities Using the Space-by-Space Method, and classifying the Club Room as a "Conference Meeting/Multipurpose Room" within a Sports Arena, the required power density is 1.5 W/ft². If using decorative fixtures to highlight decorative elements than an additional 1 W/ft² can be added to the space. Therefore, the achieved power density for this space of 1.13 W/ft² is about 55% less than allowed 2.5 W/ft².



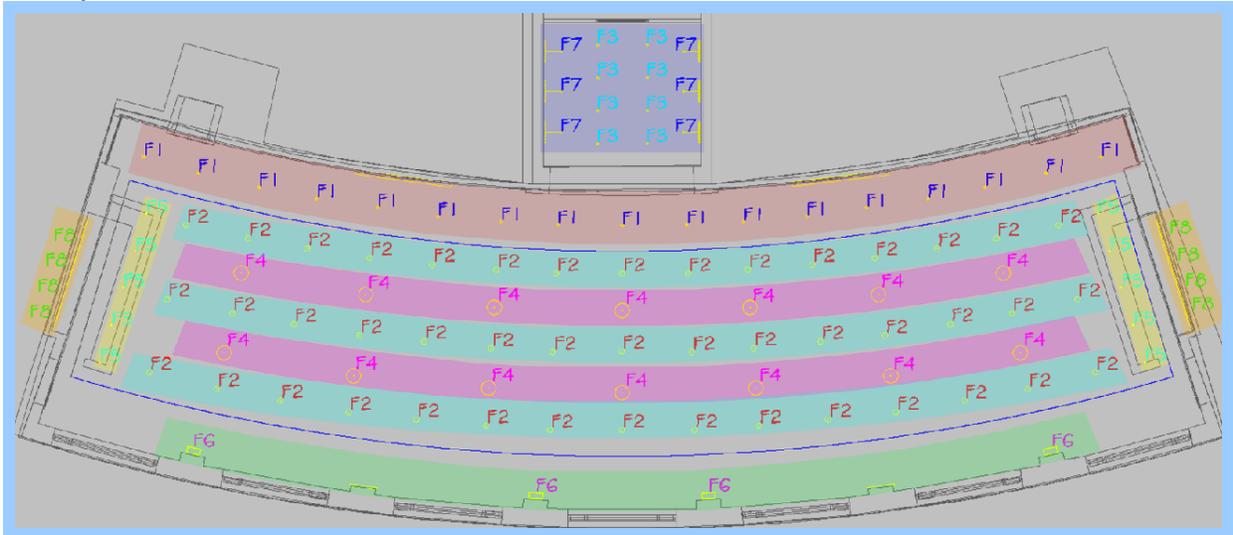
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Control Plan

Control Equipment

The Lutron Grafik Eye 4000 allows the space to have 8 different zones and 4 different scenes. Lutron black-out shades can also be connected to this system. The black-out shades will have a corresponding lighting scene that will be manually adjusted by the user. The three other scenes include a general lounge lighting for reading and gathering, formal event lighting, and a scene for the users to create on their own depending on the needs of the space. All fixtures will be linked to this system as well as emergency, which is also a nice feature of Lutron's Grafik Eye 4000, except the LED bar fixture highlighted in orange below. The LEDs will have a separate wall control.

Zoning



Dimming Panel

Panel A2-DDC01					
Dimmer	Zone	Type	Control	Load(kW)	Voltage
1	Red	LV Halogen		1.275	120/12
2	Lt Blue	CFL		1.474	120
3	Lt Blue	CFL		1.541	120
4	Dk Blue	LV Halogen		0.4	120/12
5	Magenta	CFL		1.12	120
6	Yellow	CFL		0.18	120
7	Green	CFL		0.128	120
8	Dk Blue	LV Halogen		0.12	120/12

Circuiting Note:

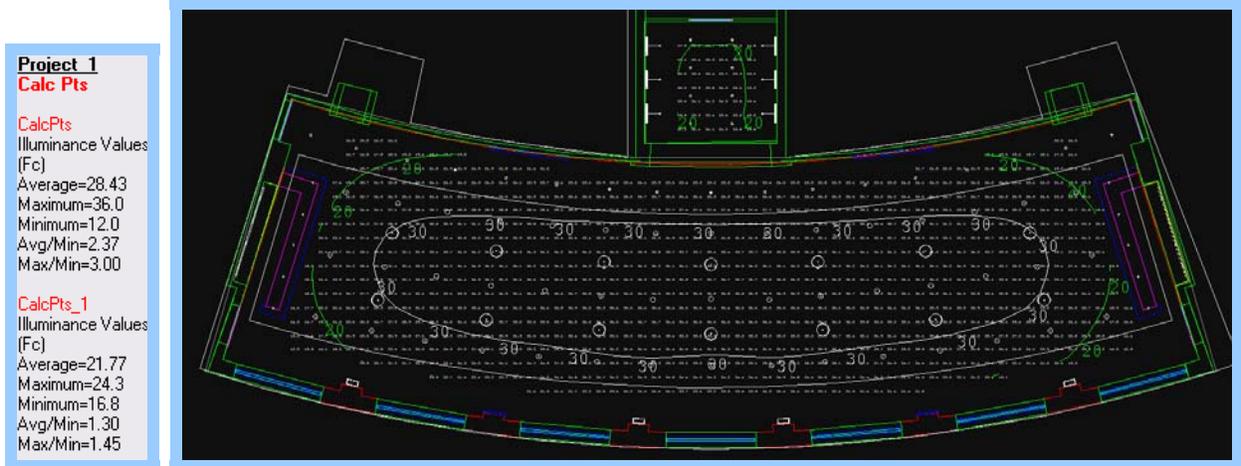
(The picture above shows zoning. Each zone will have their own circuit, except the light blue zone, which will have two circuits instead of one because the total load is above 1600kW which is the maximum allowed load per 120V circuit. The final report will include a more detailed drawing of circuiting. Because the original room is on a dimming panel and is not on a lighting panel, the

panel "re-sizing" does not need to occur. A new dimming panel will be sized in accordance to Lutron's Grafik Eye 4000 standards, including the emergency safety lighting.)



Lighting Depth

Software Calculations



As seen from the exterior at night





Lighting Depth

Entrance Corridor



Club Room



**All Renderings will be of high quality in the final report. The fixtures will be built as well.*



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Conclusion

Will conclude on final design after receiving comments back.



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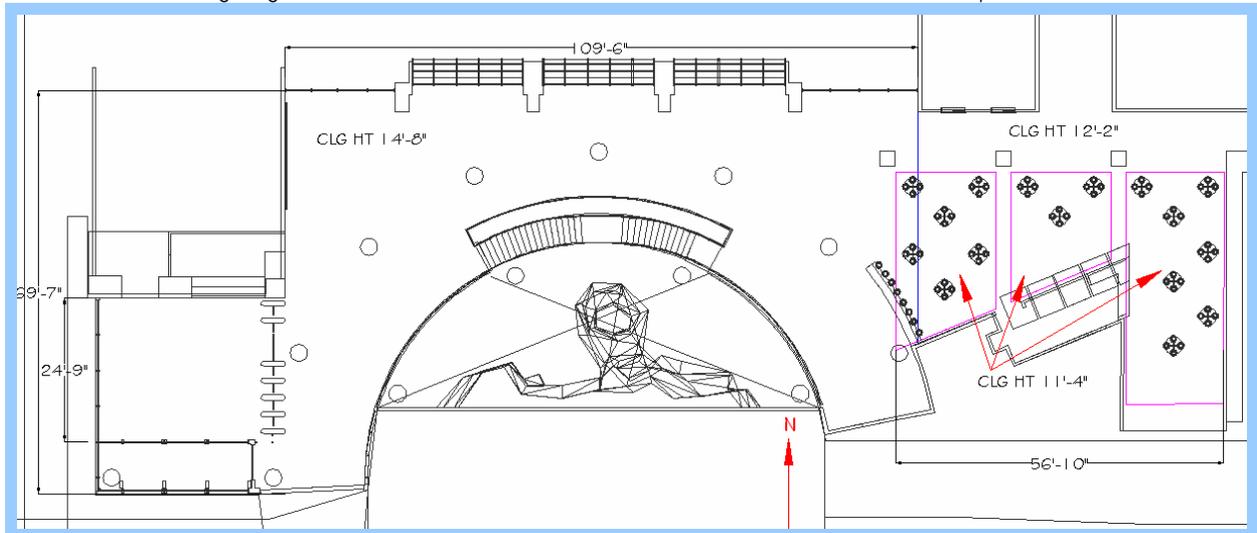
Lobby & Circulation Space

Overview

The central lobby on the first level floor is a heavy traffic area. It is the main entrance into the Fitness and Recreation Center where students must show their gym passes and id's. Once you move beyond the turnstiles (south-west corner), there is a large rotunda with a 35' climbing wall in the center. Opposite the climbing wall is a two-story window that looks directly into the competition swimming pool. From there you can either head downstairs to the racquetball courts, dance studio, or three court multipurpose gym. You may also enter the fitness center which can be accessed on the east side of the rock wall. On the east side of the Lobby space is a Juice Bar with seating for students to relax.

Floor Plan:

At the top of the drawing there are 4 columns and in between them are floor to ceiling windows which look into the competition pool area. The semi-circle around the rock wall is open to below and the bottom left is the main entrance to the Recreation Center. The signage above the main office entrance and columns are points of interest.

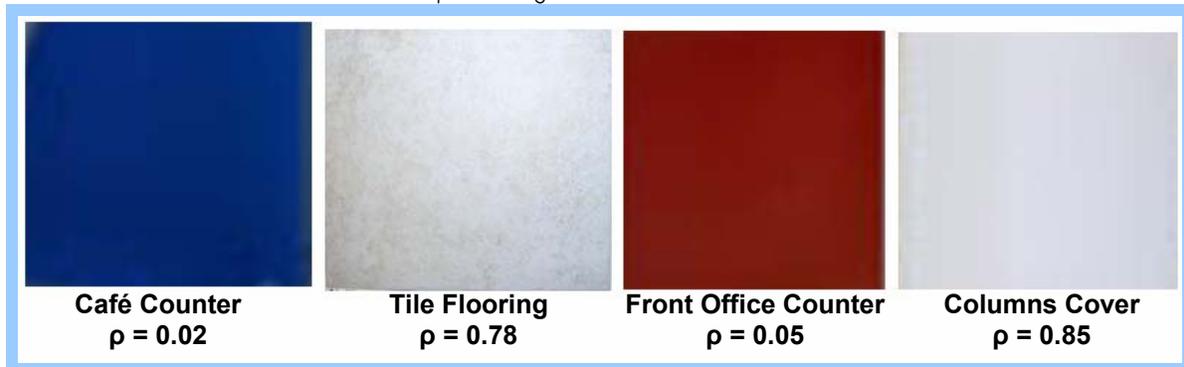




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Space Characteristics:

The main entrance and circulation lobby have a glossy tile finished floor. Most of the walls are white with a few elements painted red or blue. The columns scattered around the rotunda have a white paneling finish.



Design Criteria

Main Goal: To generate a design that provides a functional and creative lighting design that contributes to the flow of traffic through the space.

Appearance of the Space and Luminaires: The space should feel inviting for all those who enter. Fitness centers tend to use a very cool color temperature lighting which doesn't feel as welcoming as a warmer color temp. When I enter the White Building I do not like the feel of the cool color temp fluorescent fixtures used in the space. Want to avoid 2' x 4' fixtures or any type of typical office or industrial fixture.

Color Appearance: There are red and white accent colors throughout the space to represent BU; avoid using cooler color temperatures in order to keep the red as vibrant as can be. You want people to feel welcome at a public fitness center, as though they are at their own home exercising, with warmer CCT's it's possible to create a "homey" feeling.

Daylighting Integration and Control: Daylighting is not a major factor in this space. The main entrance is glass as well as the adjoining fitness center, but the lobby itself does not have any direct daylight.

Direct Glare: All fixtures should have a coating or enclosure to avoid direct glare if mounted along the horizontal viewing plane.



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Light Distribution on Surfaces: Vertical light distribution on signage, pictures, and the main entrance office should be accented to direct the flow of traffic through the space. Generally a non-uniform light distribution should be implemented.

Modeling of Faces/Objects: Facial modeling is very important in this area because it is a heavy circulation area; want to avoid strong facial shadows and make sure there is a considerable amount of vertical illuminance. Objects on the walls should also be highlighted with accent lighting.

Points of Interest: Main entrance office/reception area, architecture surrounding lobby/circulation space, rotunda fitness center, wall hangings, BU signs and/or plaques, and two-story window looking into pool area are strong points of interest when analyzing the lighting design.

Reflected Glare: Want to avoid reflected glare from luminaires off pool window, reception window, and glossy floor tiles.

Surface Characteristics: The floor throughout the space is a nice glossy tile, the walls are white as well as the ceiling; there should be a warm feeling kept in the space.

System Control and Flexibility: A flexible dimming system should be incorporated throughout the lobby and main entrance in order to vary light levels during different hours of the day.

Horizontal Illuminance: The recommended illuminance level is about 10fc for circulation ease.

Vertical Illuminance: There should be about 5fc for facial recognition



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Design Concept

The overall design concept of the lobby space is to highlight the spatial characteristics. The lobby has many unique features that should be acknowledged in the lighting design. The central focus is the circular rotunda on a 40ft radius. In order to bring this characteristic out the lighting will follow this same circle.

Another lighting design concept will look at the architect's purpose for this space. When entering the lobby one has the ability to watch a swim competition, enjoy a cold fruit drink, watch rock climbers, as well as view into the basketball courts. The lobby is central circulation space but it is also an area that is full of Boston University's activity life. In order to bring out the spirit of Boston University student's, I would like to incorporate the school pride, the school colors, in the lighting design. I would also like to add some color to the juice bar to highlight the different colors of fruit.

The lobby space is generally very bland in color. The walls, floor, and ceiling are some form of white. The juice bar has some color, but only around the counter. Therefore, adding color for the purpose of the school colors AND for some design aesthetics is also desired. The lighting should also guide people through the space.

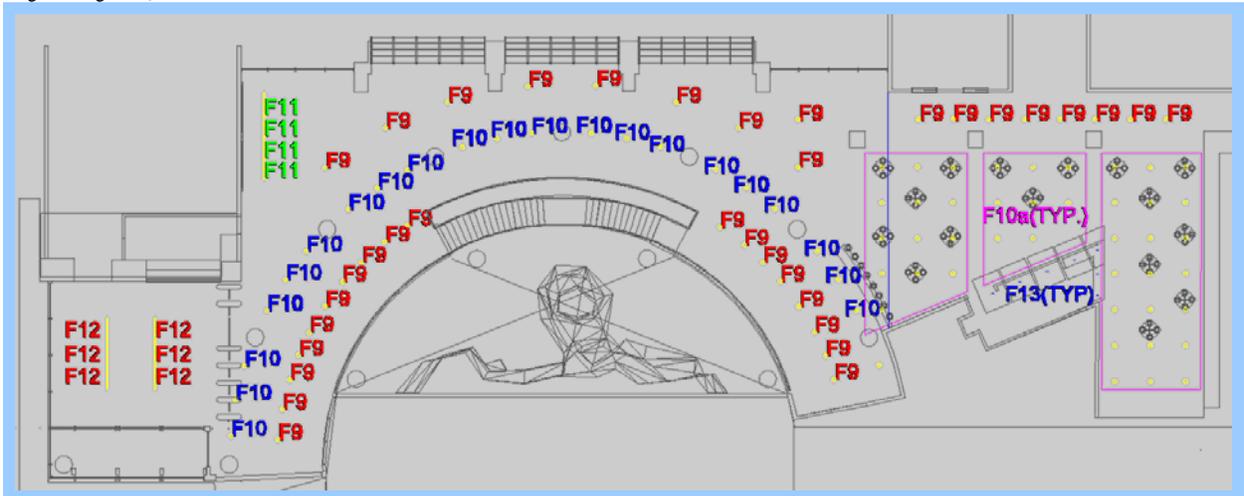
(Included in this area will be a design sketch.)



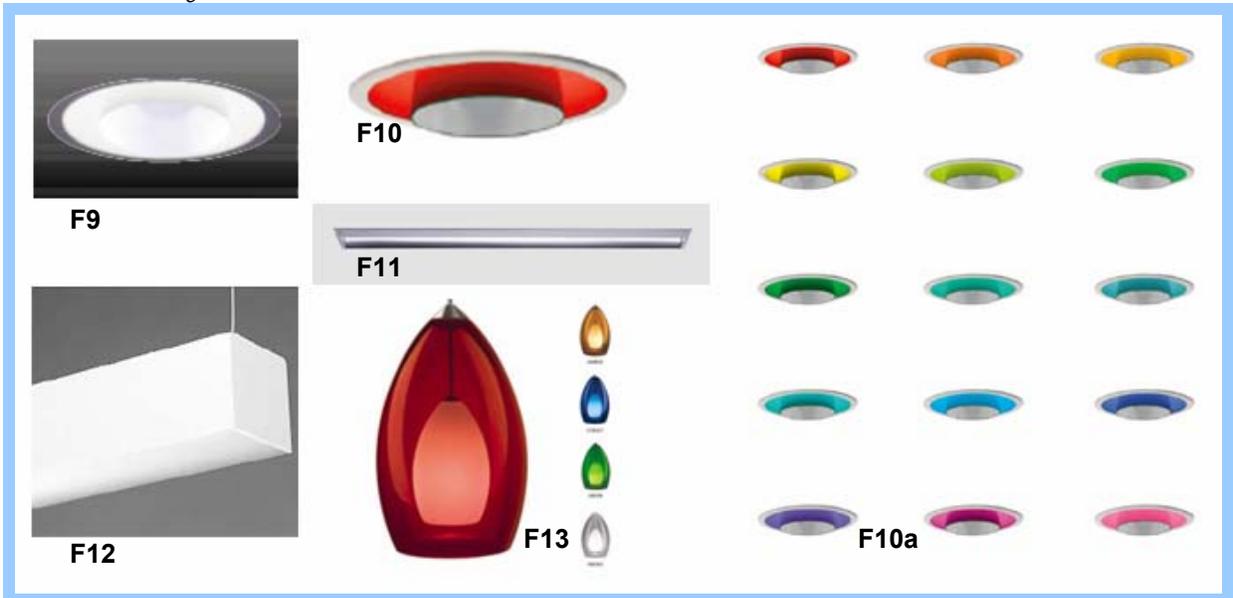
Lighting Depth

Lighting Plan

Lighting Layout



Luminaire Images





Lighting Depth

Luminaire Schedule

Label	Description	Catalogue NO.	Lamp			Ballast		Voltage	Fixture Qty.
			NO.	Type	Watts	Type	Lamps		
F9	Recessed Compact Fluorescent Downlight with Candeo Clear	Gotham Lighting PDGF 1/32TRT 8AR WHT	1	CF32WTRT	32	Electronic	1	277	35
F10	Recessed Compact Fluorescent Downlight with Red LED Ring	Gotham Lighting PDLFV 32TRT 8AR LD	1	CF32WTRT + LEDs	32	Electronic	1	277	22
F10a	Recessed CFL Downlight with Color Changing LED Ring	Gotham Lighting PDLFV 42TRT 8AR LD	1	CF42TRT + LEDs	42	Electronic	1	277	42
F11	Recessed Linear Fluorescent Wallwash	ERCO 65040.023	1	F28T5 Min Bipin	28	Electronic	1	277	4
F12	Linear Fluorescent Indirect Pendant	se'lux M100 1T5HO-C-012-WH	1	F54T5HO	54	Electronic Dimming	1	277	6
F13	Halogen Decorative Pendant	Tech Lighting 700 Color Variation	1	40W T4 G9 Pin Base	40	N/A	N/A	120	6

Light Loss Factors

Luminaire Label	Maintenance Category	LLD	LDD	RSDD	BF	Total LLF
F9	IV	0.84	0.94	0.98	0.98	0.774
F10	IV	0.84	0.94	0.98	0.98	0.774
F10a	IV	0.84	0.94	0.98	0.98	0.774
F11	IV	0.92	0.94	0.98	1.04	0.848
F12	VI	0.92	0.93	0.9	0.99	0.77
F13	II	1	0.97	0.94	-	0.912

Assume: 12 month cleaning interval and a very clean environment.

Power Density

Label	Qty	Watts	Total Watts
F9	35	36	1260
F10	22	38	836
F10a	42	48	2016
F11	4	33	132
F12	6	62	372
F13	7	40	280
Total:			4896
Sq Ft:			6500
Power Density:			0.753231

ASHRAE 90.1 Power Density Requirements: Using Table 9.3.1.2, Lighting Power Densities Using the Space-by-Space Method, the gymnasium “lobby” has an allowed maximum power density of 1.8 W/ft². Therefore, the lighting layout of this space of 0.75 W/ft² is about 58% less than the allowed power density for this type of space.



Lighting Depth

Renderings

Juice Bar



(I have scheduled a meeting with Ted for Tuesday to discuss the panelboards and circuiting. I do not have existing panelboard schedules so I would like to discuss how to proceed with Ted. He may have me use the drawings to create the existing panelboard schedules, but I am not sure just yet. I do know it's a 277V system, and I'm pretty sure there are separate lighting panels. I will then include control equipment, zones, circuiting, feeders, etc. Calc Points- Although not shown the average illuminance throughout the space is 20fc and 30-40fc in the juice bar for reading purposes.