

North East Plaza

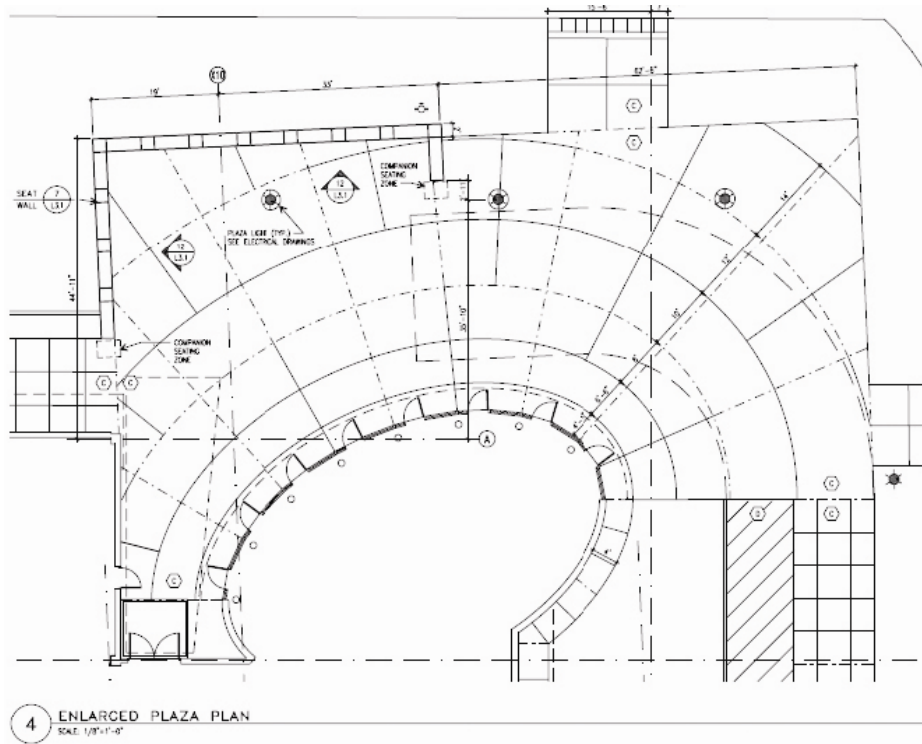


Design Synopsis

As the name suggests, the North-East Plaza is a public space located on the NE corner of the Student Resource Building. It covers an area of approximately 5840 sf and lends itself well to becoming a comfortable outdoor environment for people to socialize. The plaza's orientation opens up to the central campus area. Special architectural features of this space can be seen in the engraved elliptical lines on the concrete paving which resonates the form of the multipurpose room whose façade gently protrudes into the space. Materials that are used in this plaza include: steel, architectural concrete and metal cladding.

Though the original design proposed the use to LED light sources to illuminate the elliptical contours on the ground, this has changed due to power density reasons. After much re-iteration, the new design satisfies this requirement and is still in tune with the original aim of providing a visually interesting space through the careful placement of light.

Existing Layout



Enlarged Plaza Plan

Design Criteria

Space and Luminaire Appearance

The plaza was conceived as a space that allows people to gather and exchange ideas. Therefore, it is crucial that the space appears pleasant and inviting. Luminaire styles should conform to not only campus architecture but more importantly, the modern aesthetics of the SRB.

Color Appearance and Color Contrast

Color tones of the building material contrast with that of a person's skin. Spectral output of selected lamps should account for this to provide good color rendition of space occupants and their surroundings. Color contrast and variation may be desired to make this plaza more visually appealing.

Controls

To satisfy Title 24 requirements for automatic shutoff, all outdoor luminaires installed in this space should have automatic shut off controls which are regulated by photo-control sensors.

Glare Considerations

In order to satisfy the objective of providing a comfortable environment for social interaction, direct and reflected glare should be avoided. Special consideration should be taken to avoid reflected glare from the glazing of the adjacent Multipurpose Room.

Light Distribution and Uniformity

To create a space with a higher degree of visual interest, light should not be too evenly distributed on all surfaces of the plaza. However, a sufficient level of uniformity must be met for public safety.

Light Pollution/ Trespass

In the interest of complying with the Dark Sky Ordinance, light pollution/ trespass should be avoided. Fixtures chosen should comply with the cut-off criteria as stated in California's Title 24 (2006). Light trespass is less of a concern in this space since the plaza is surrounded on all sides

by campus property.

Facial/ Object Modeling

Again, the plaza is used for social interaction. Therefore, facial modeling considerations also warrant design attention.

Points of Interest

The plaza has a very unique form. Light should be used to enhance the architectural details present here.

Shadows and Peripheral Detection

In the interest of public safety, sufficient light levels should be provided to avoid any shadows or overly dark areas in the plaza. Space occupants should be able to see their surroundings.

IESNA Illuminance Recommendations

Horizontal

Cat. A: Public spaces 30 lx (3 fc)



Vertical

Cat. A: Public spaces 30 lx (3 fc)

Schedules and Lighting Layouts

Luminaire Schedule



Location: NE Plaza (Open Area)

Type	Quantity	Catalog No.	Lamping / Ballast	Watts/ Fixture	Ballast/ fixture	Total Watts	Voltage
E1 	4	Bega 8945MH Linear Ceramic Metal Halide Luminaire	1- (L2) GE Lighting 20017 CMH/T/U/942/G12	173	1 - (B1) Advance Transformers: 71A5437BP	692	277V
E2 	11	Bega 8083 Small scale drive over low voltage halogen uplight	1- (L6) GE Lighting 42959 Q5T3/CL	5	-	55	277V

Total Watts: 747 **W**
Space Area: 5348 **SF**
Achieved Power Density: **0.14** **W/SF**
Allowed Power Density: 0.17 **W/SF**
Status: Ok

Luminaire Schedule

Location: NE Plaza (Canopy)

Type	Quantity	Catalog No.	Lamping / Ballast	Watts/ Fixture	Ballast/ fixture	Total Watts	Voltage
E2 	4	Bega 8083 Small scale drive over low voltage halogen uplight	1- (L6) GE Lighting 42959 Q5T3/CL	5	-	20	277V
E3 	4	Bega 4096P Linear fluorescent wall mount fixture	1 - (L7) Philips Lighting 347476 PL-L 50W/830/4P RS	54	1 - (B3) Advance Transformers: REL-1TTS50	216	277V

Total Watts: 236 **W**
Space Area: 492 **SF**
Achieved Power Density: **0.48** **W/SF**
Allowed Power Density: 0.50 **W/SF**
Status: Ok

Ballasts Schedule

Location: NE Plaza

Type	Manuf.	Catalog Name	# Lamps	Ballast Type	Start Method	Input Watts	Ballast Factor	Power Factor	THD (%)	Assoc. Fixture
B1	Advance Transformers	71A5437BP	1 - (L2)	Magnetic Standard	Ignitor	173	1.00	0.9	<10%	E1
B3	Advance Transformers	REL-1TTS50	1 - (L7)	Electronic	Rapid Start	54	0.98	0.98	<20%	E3

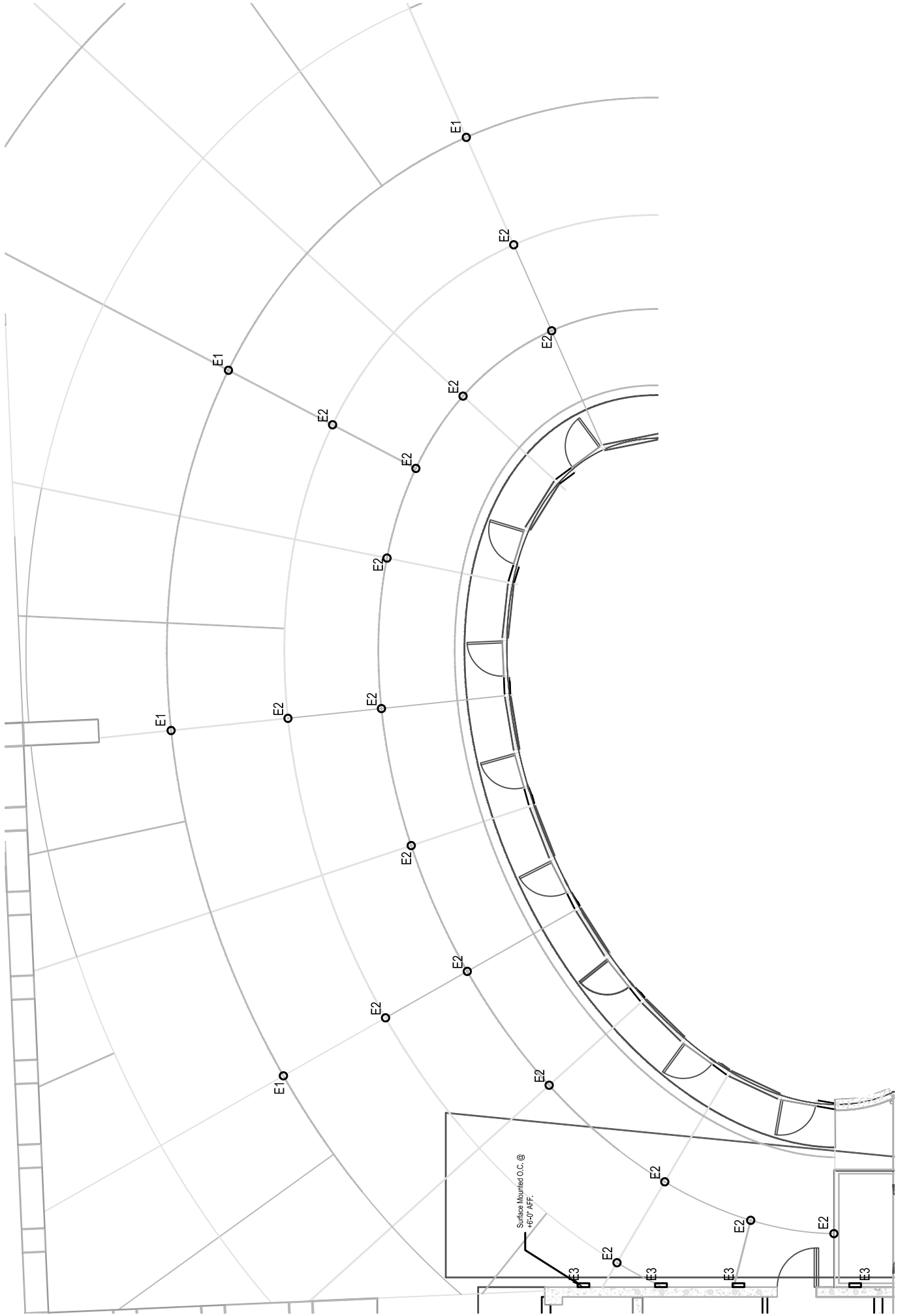
Lamp Types Schedule

Location: NE Plaza

Type	Manuf.	Designation	Rated Wattage	Base	CRI / CCT	Rated Life (hrs)	Initial Lumens	Assoc. Fixture	Assoc. Ballast
L2	General Electric	92584 CMH/TU/942/G12	150	G12	82 / 3000K	12000	14000	F5	B1
L6	General Electric	42959 Q5T3/CL	5	G4	80 / 3000K	2000	60	E2	-
L7	Philips Lighting	347476 PL-L 50W/830/4P RS	50	2G11	82 / 3000K	10000	4000	E3	B3

Notes: Please see Appendix A for all product cutsheets and complete schedules.

Lighting control intent is located in the electrical depth.



UCSB Student Resource Building

NE Plaza - Lighting Plan

Scale: $\frac{3}{8}$ " = 1'-0"



Assumptions

Surface Reflectances

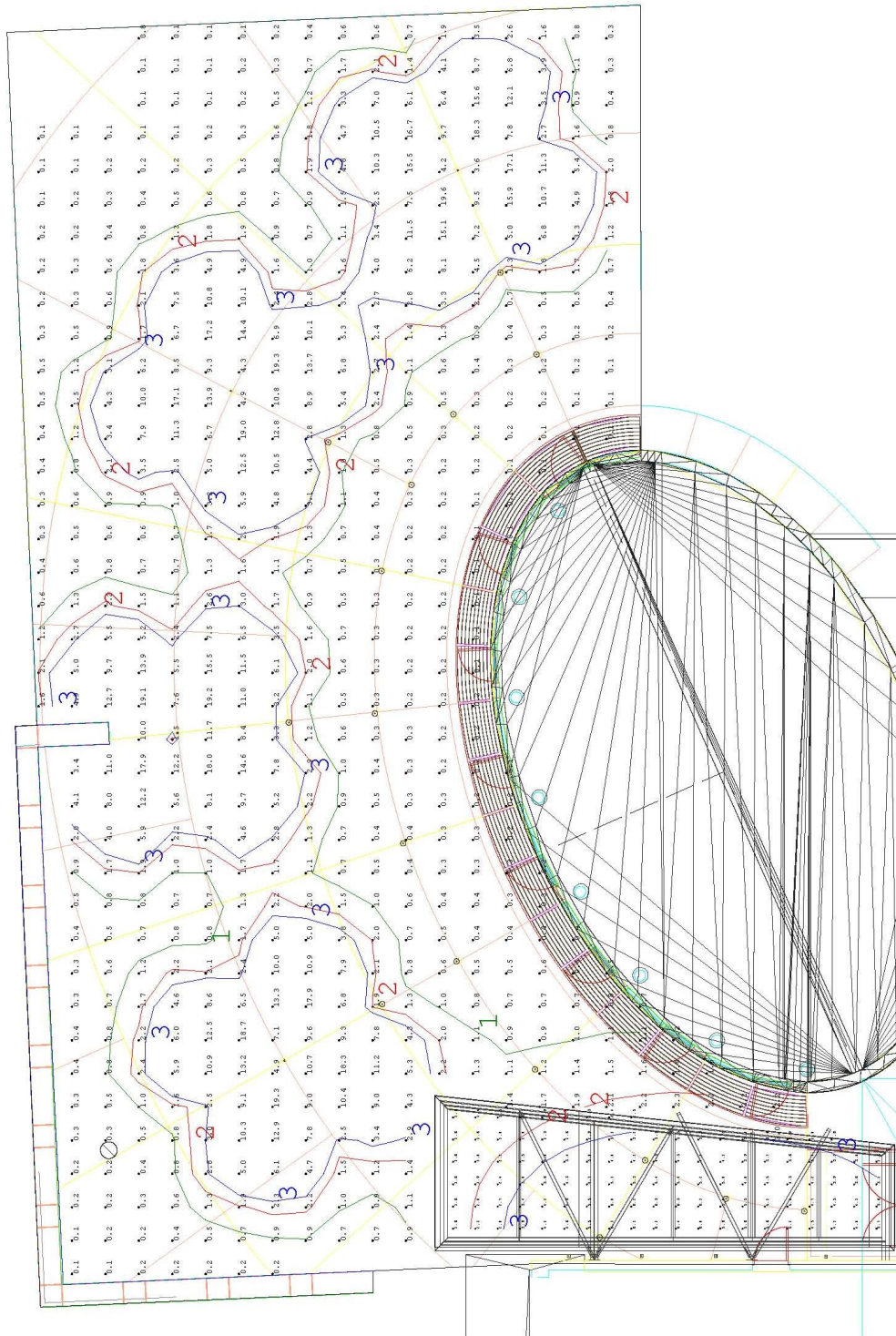
Material	Location	Reflectance (%)
Steel	Canopy Structure	22
Architectural Concrete	Plaza	20
Metal Cladding	Building Facade	30

Light Loss Factors

Label	IESNA Maintenance Category	Distribution Type	Environment Cleanliness	Cleaning Cycle	LLF				TOTAL
					LLD	LDD	RSDD	BF	
E1	VI	Direct	Dirty	12mo	0.79	0.88	0.95	1.00	0.66
E2	VI	Direct	Dirty	12mo	0.85	0.88	0.95	1.00	0.71
E2	VI	Direct	Dirty	12mo	0.94	0.88	0.95	0.98	0.77

Illuminance Data

(Software used: AGI32 – v1.92)

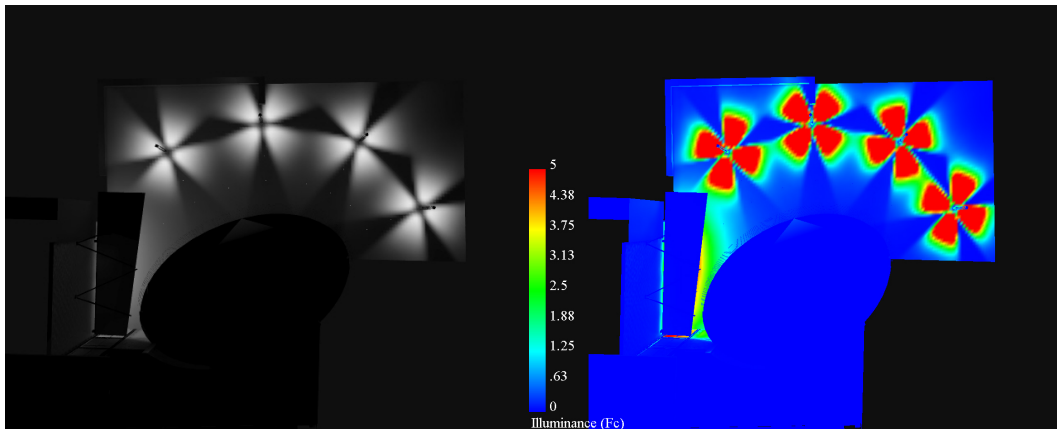


AGI32-v1.92 Statistical Summary

Calculation Area	Average Illuminance (fc)	Max. (fc)	Min. (fc)	Avg/min	Max/min
General Plaza Area (Ground-level)	3.1	19.6	0.1	2.7	196.0
Entrance Canopy Area (Ground-level)	3.8	6.4	1.4	5.0	10.8

Radiosity Renderings

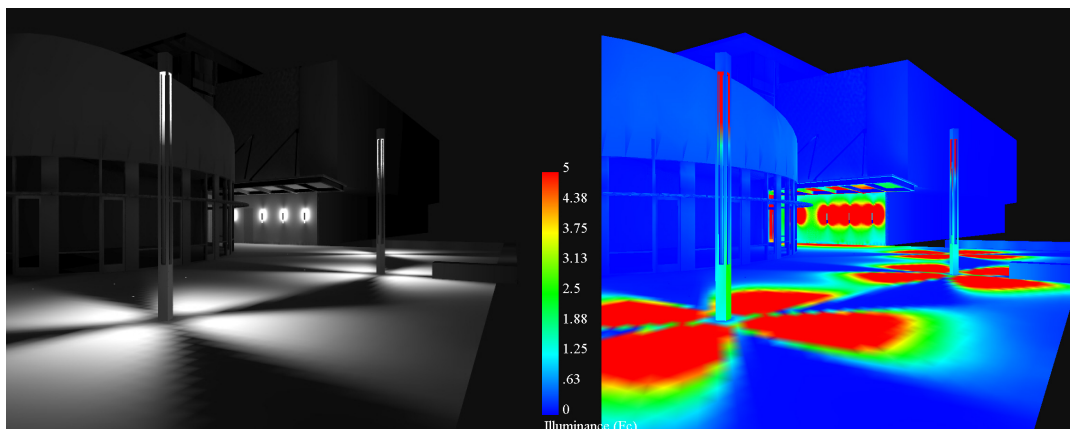
Plan View



Rendering

Pseudo Rendering

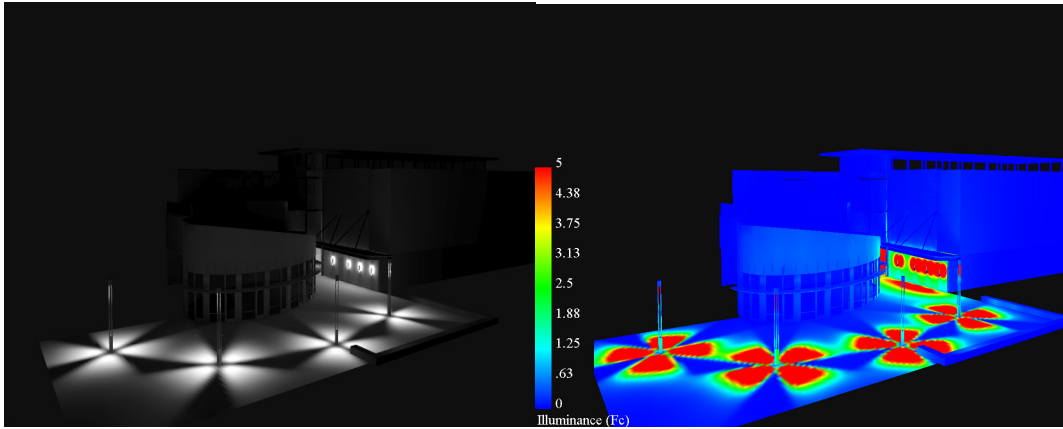
Approach from Central Campus



Rendering

Pseudo Rendering

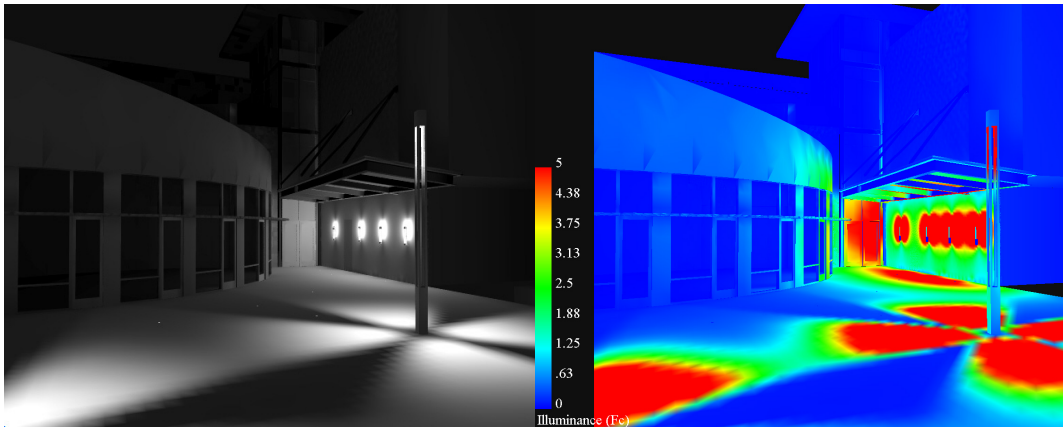
Perspective View



Rendering

Pseudo Rendering

View of Entrance Canopy



Rendering

Pseudo Rendering



Night Time Rendering

Evaluation

In addition to providing visual interest to the space, the lighting system that has been implemented satisfies the basic illumination requirements described by the IESNA that are typical of an outdoor gathering space. The adaptation of the existing elliptical form of this plaza as a regulatory constraint of the placement of lights has successfully created a lighting solution that ties together this space and the adjacent Multipurpose Room.