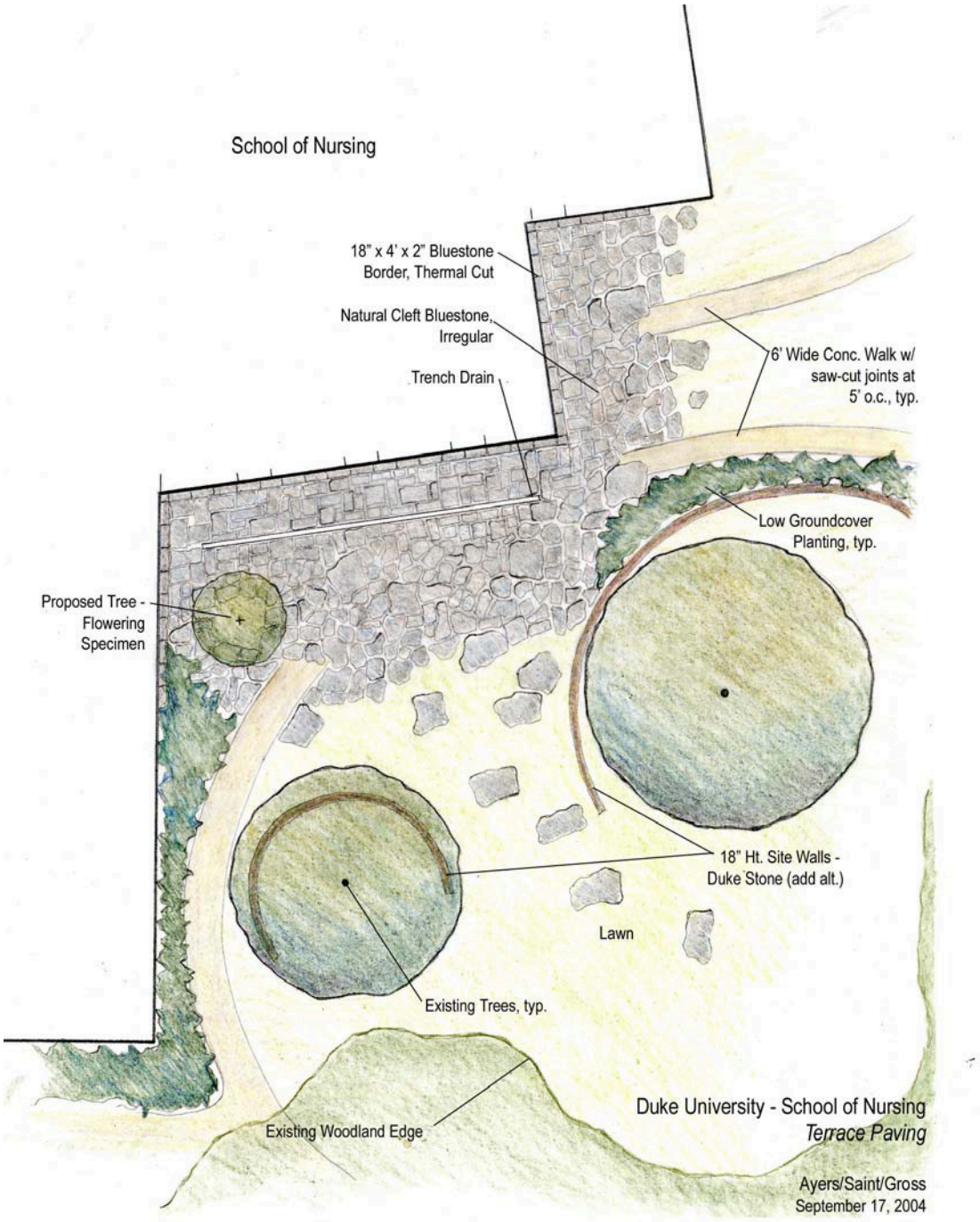
Champagne Outdoor Courtyard Overview

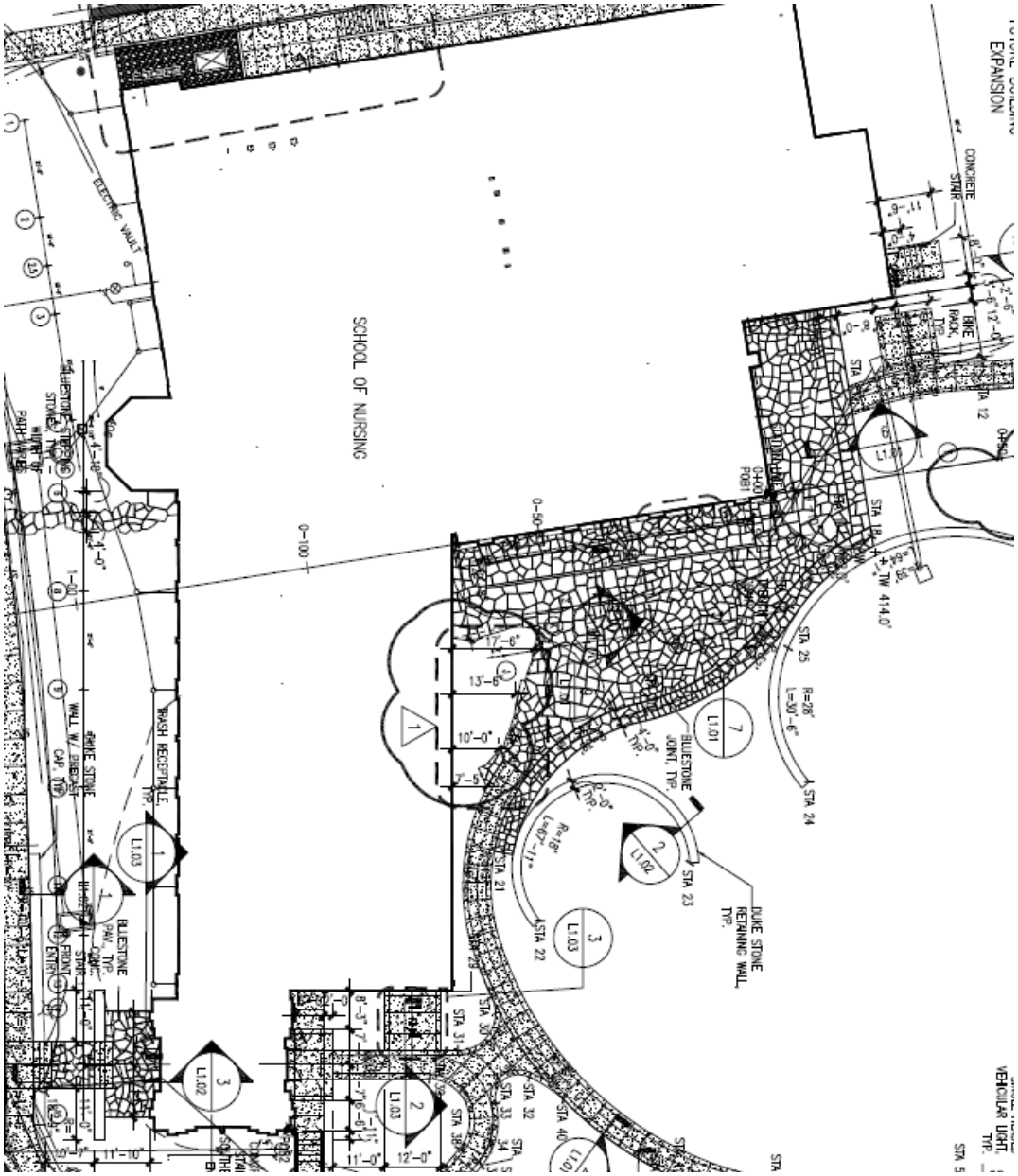
The courtyard is located on the East side of the building and covers an approximate area of 1450 SF. The courtyard serves as the outdoor portion of the Café DUSON lounge. There are tables and benches that seat approximately 54 people. The courtyard is intended to provide a sense of relaxation and comfort, with its gentle curving retaining walls, random natural cleft Bluestone paver pattern, and the incorporation of trees and shrubbery around the courtyard.

Architect's Conceptual Rendering



*The above is a conceptual rendering by ASG

Architectural Plan



Architectural Elevations

The curved retaining walls are rise 2-ft off of the courtyard stone pavers.

IESNA Design Criteria

Appearance of Space and Luminaires:

The courtyard is a space that is intended for people to gather and work or relax. With the knowledge of this intended use, it is critical that the space appear inviting and have a sense of pleasantness. The luminaire styles should accent the Duke University Architectural Style of Gothic Architecture.

Color Appearance:

The color appearance of the courtyard should have a slight warm tone to it. Being that the courtyard is adjacent to and essentially the outdoor portion of the warmly lit Café DUSON, it is critical that the courtyard carry similar characteristics.

Controls:

All the outdoor luminaries within this space should use an astronomical time clock.

Light Distribution on Surfaces:

For public safety, some degree of uniformity must be maintained on the pathways. To create visual interests and bring out the inherent textures of the materials of the space, grazing and other forms of non-uniformity should be used.

Light Distribution on Task Plane:

The courtyard and its walkways are some of the main means of egress from the building and therefore require the walkways and courtyard surface to maintain an illuminance level of 1 lx (0.1 fc) over the entire path of egress.

Modeling of Faces and Objects:

The courtyard is used by occupants of the building as well as passersby therefore face and object recognition is important for security and safety reasons.

Points of Interest:

The trees surrounding the courtyard were an important part of the building, since these trees are original to the site. The architecture of the courtyard retaining walls highlight their existence and give them a sense of importance to the space. For this reason, accenting these trees with light will reinforce this design objective and provide a point of interest. Also, the curved retaining walls that contain the previously mentioned trees are an interesting architectural feature that should also be highlighted for the patrons of the café and passersby to notice.

Shadows:

Shadows should be avoided in the interest of safety and security.

Surfaces Characteristics:

The courtyard has a variety of stonework and trees that should be highlighted to some extent to draw out their natural textures by grazing.

IESNA Illuminance Recommendations

Horizontal	
Pathways Away from Building	10 lx (1 fc)
Vertical	
Pathways Away from Building	3 lx (0.3 fc)

Existing Material Conditions

Surface Materials within the Space:

- Natural Cleft Bluestone walkway and courtyard
  - Reflectance = 15%
- Duke Stone retaining walls
  - Reflectance = 20%
- Gray Painted Aluminum Mullions
  - Reflectance = 25%

Glazing:

- **G-5:** 1" Insulated Glass Curtain Wall System of Café DUSON
  - U-Value = 0.57
  - Transmittance = 0.55
  - Shading Coefficient = 0.45

- **G-4:** 1" Insulated Glass – Laminated (door glass)
  - U-Value = 0.57
  - Transmittance = 0.55
  - Shading Coefficient = 0.45

Luminaire Schedule

Champagne Outdoor Courtyard- Luminaire Schedule							
Type	Mounting	Manufacturer	Catalog Number	Lamp	Input Watts	Volts	Fixture Description
K	Outdoor In -ground Recessed	Erco	33670	(1) 10W T3 2-Pin G4 Halogen GE Q10T3/CL	10	120	10W Halogen, 120V Outdoor In-ground recessed uplight UL Wet Listed Impact Resistant Cut-off angle 30°

Light Loss Factors

Champagne Outdoor Courtyard- LLF												
Type	Fixture Description	Lamp	Mean Lumens [Initial Lumens]	LLD	Room Properties (Ft.)		RCR	Assumptions	Expected Dirt Depreciation	RSDD	LDD	BF	Total LLF
K	10W T3 Halogen Closed Clear Lens Top Closed Bottom Outdoor in-ground Uplight Maintenance **Category VI**	(1) 10W T3 2-Pin G4 Halogen GE Q10T3/CL	140 140	1.0	Height Length Width Perimeter Area (ft^2)	0 ~95 ~52 405 3860	1.00	Very Dirty 12 Months Cleaning Cycle	30	0.94	0.64	1.00	0.602

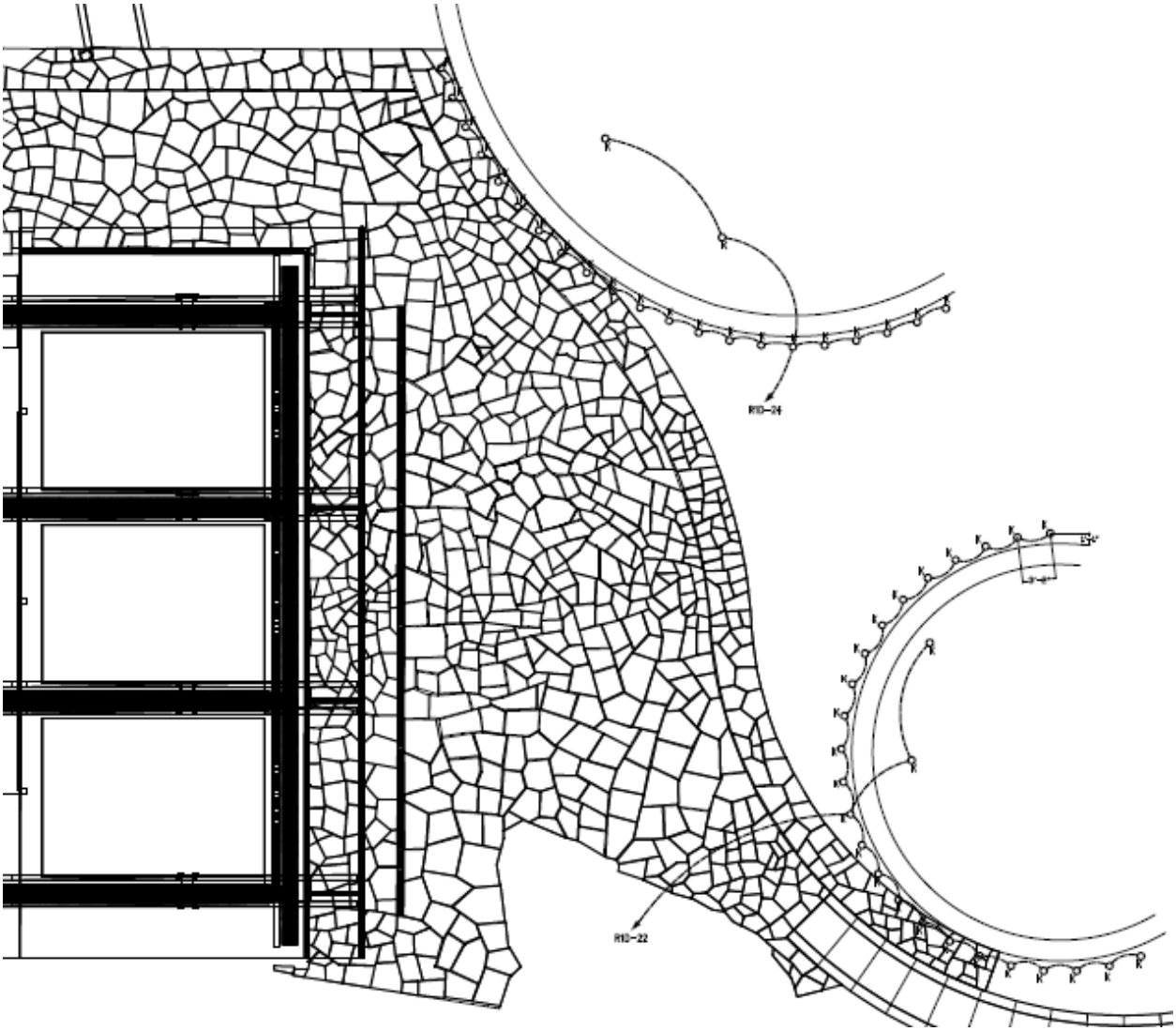
Lamp Schedule

Champagne Outdoor Courtyard- Lamp Schedule							
Type	Manufacturer	Cat. #	Rated Wattage	CRI / CCT	Rated Life	Initial Lumens	Assoc. Fixture
L6	General Electric	Q10T3/CL	10	1.0/2800	2000	140	K

Notes: (1) please refer to Appendix A for all product cut sheets and complete schedules.

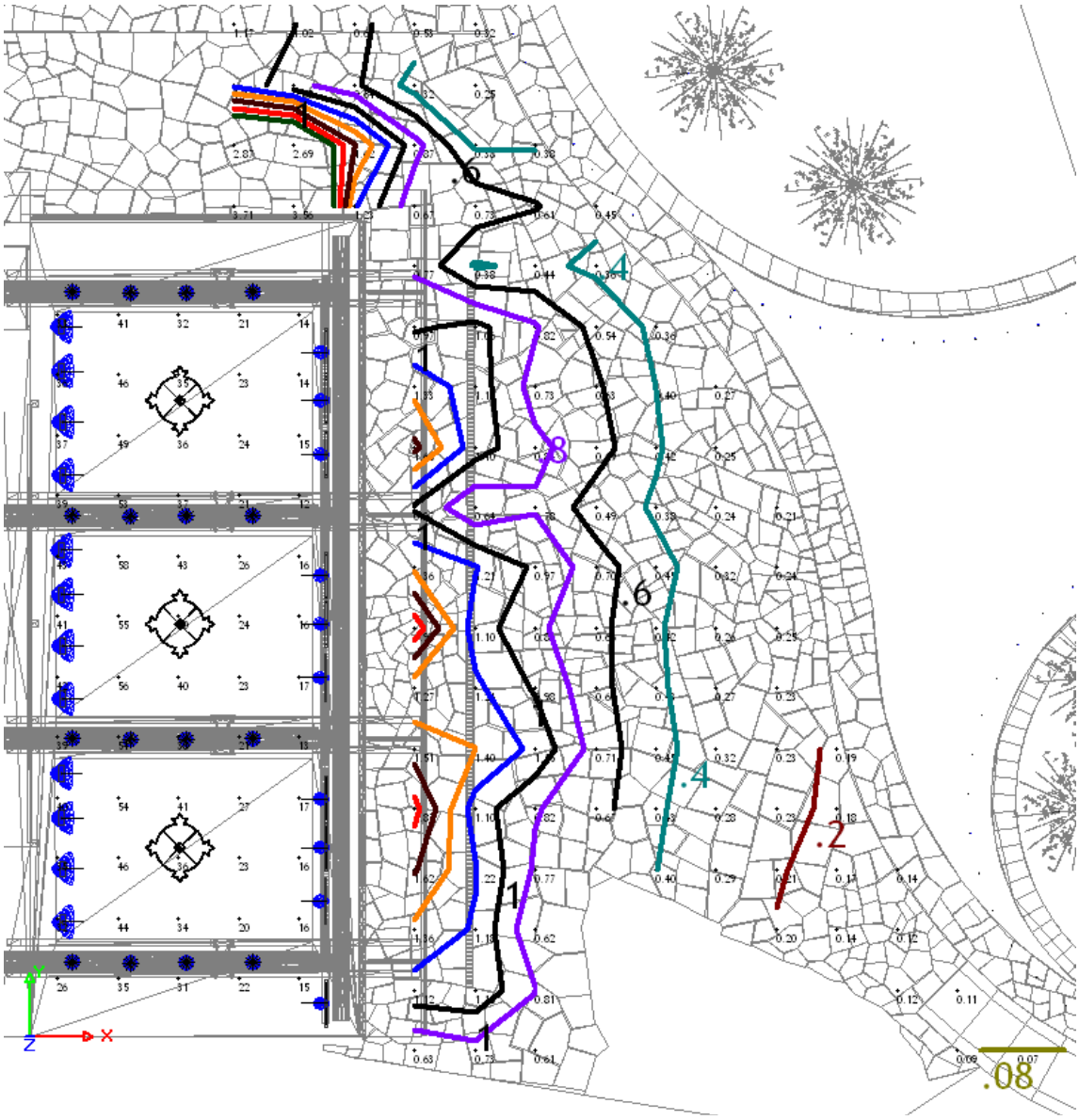
(2) this space will be controlled by an astronomical time clock located in the first floor west AV closet, where PNL R1D is located.

Lighting Plan



Note: Please refer to Appendix B for 1/8" = 1'0" Lighting and Circuiting Plan

Illuminance Data



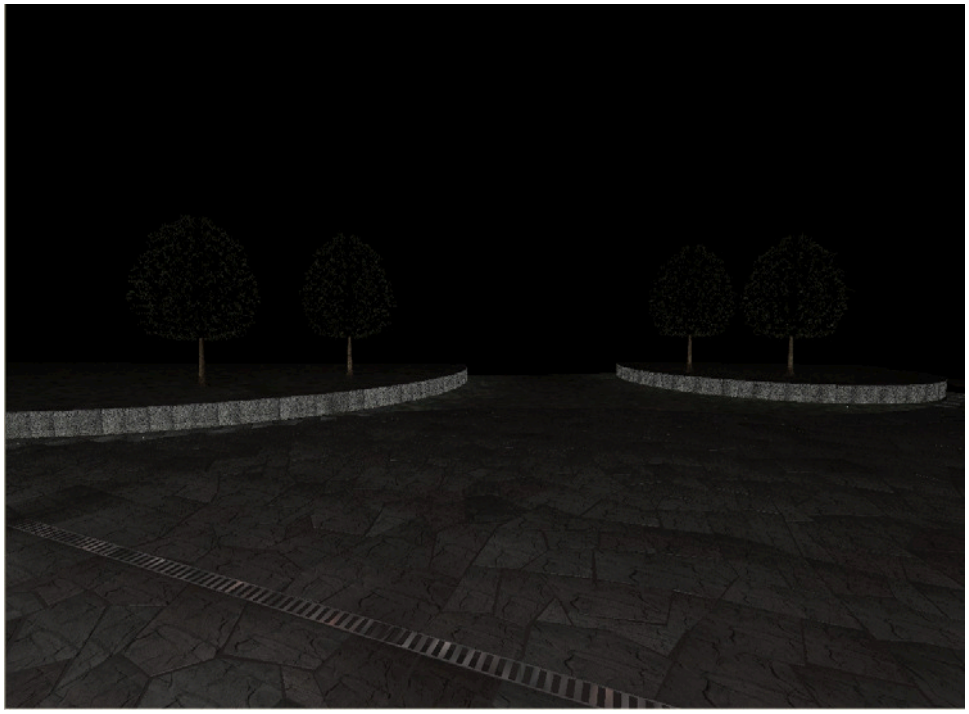
AGI32-v2.0 Statistical Summary

Duke Tower Entrance Lobby- Illuminance Results					
Average Illuminance	Maximum Illuminance	Minimum Illuminance	Avg/Min	Max/Min	Uniform Gradient
0.77	3.70	0.07	11.00	53.00	3.58

Radiosity Renderings

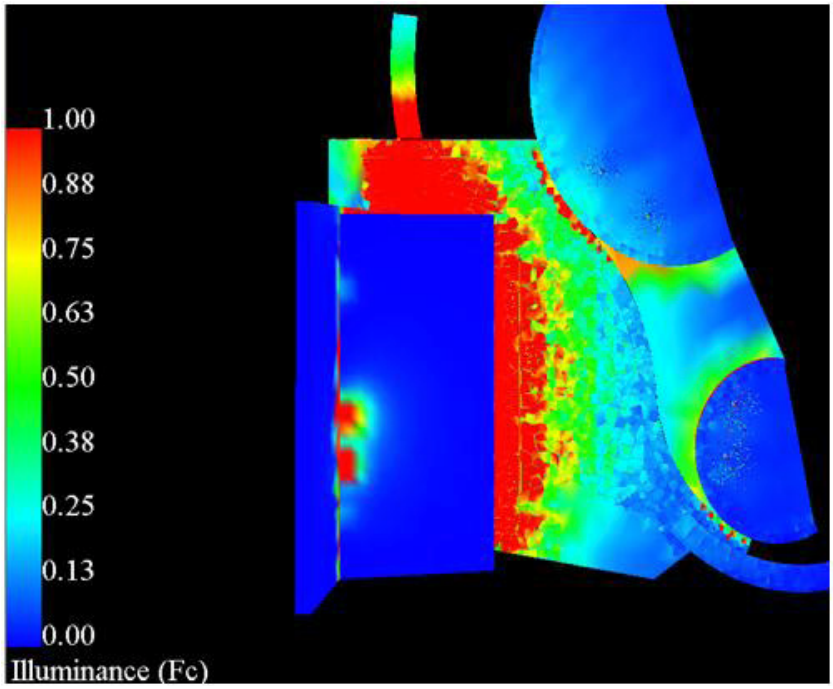
Plan View:

View from Café DUSON East Exterior Doors:

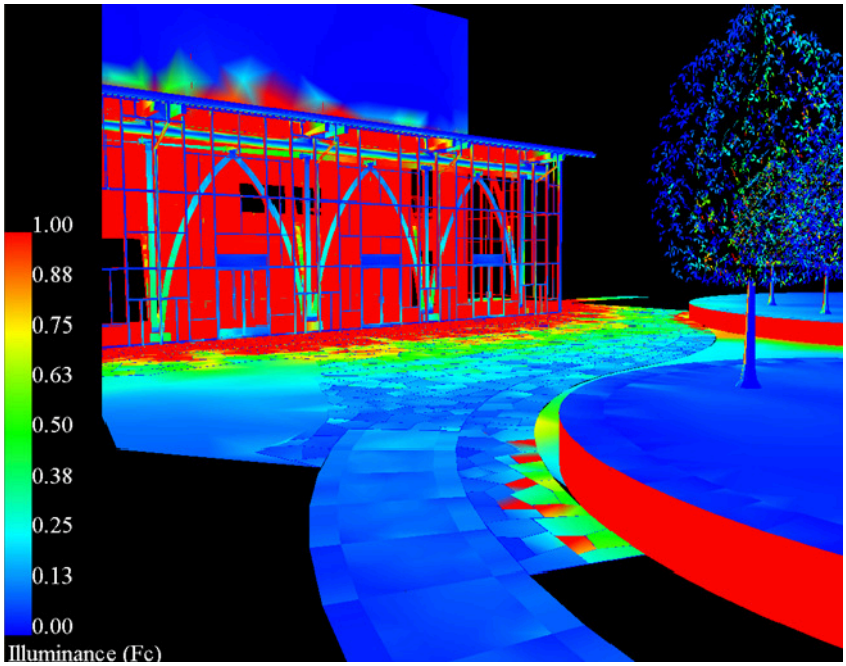


Pseudo Color Renderings

Plan View:



View from South Walkway Looking Northwest:



Power Density

Champagne Outdoor Courtyard Power Density						
Fixture Type	Fixture Quantity	Fixture Wattage	Total Wattage (W)	Total Area (sf)	Actual Power Density (W/sf)	ASHRAE 90.1 Allowed Power Density
C	48	10	480			
			480	3859.6	0.12	0.2

Evaluation

The lighting system that has been implemented almost meets the basic illumination requirements recommended in the IESNA. The average horizontal illuminance was 0.77 fc as compared to the recommended value of 1.0 fc. This illuminance was calculated with no other lights on, where in reality there is trespass light on the space from roadway and parking lot lights that were not part of this scope. Therefore I am comfortable saying that this space meets the IESNA recommended illuminance values.