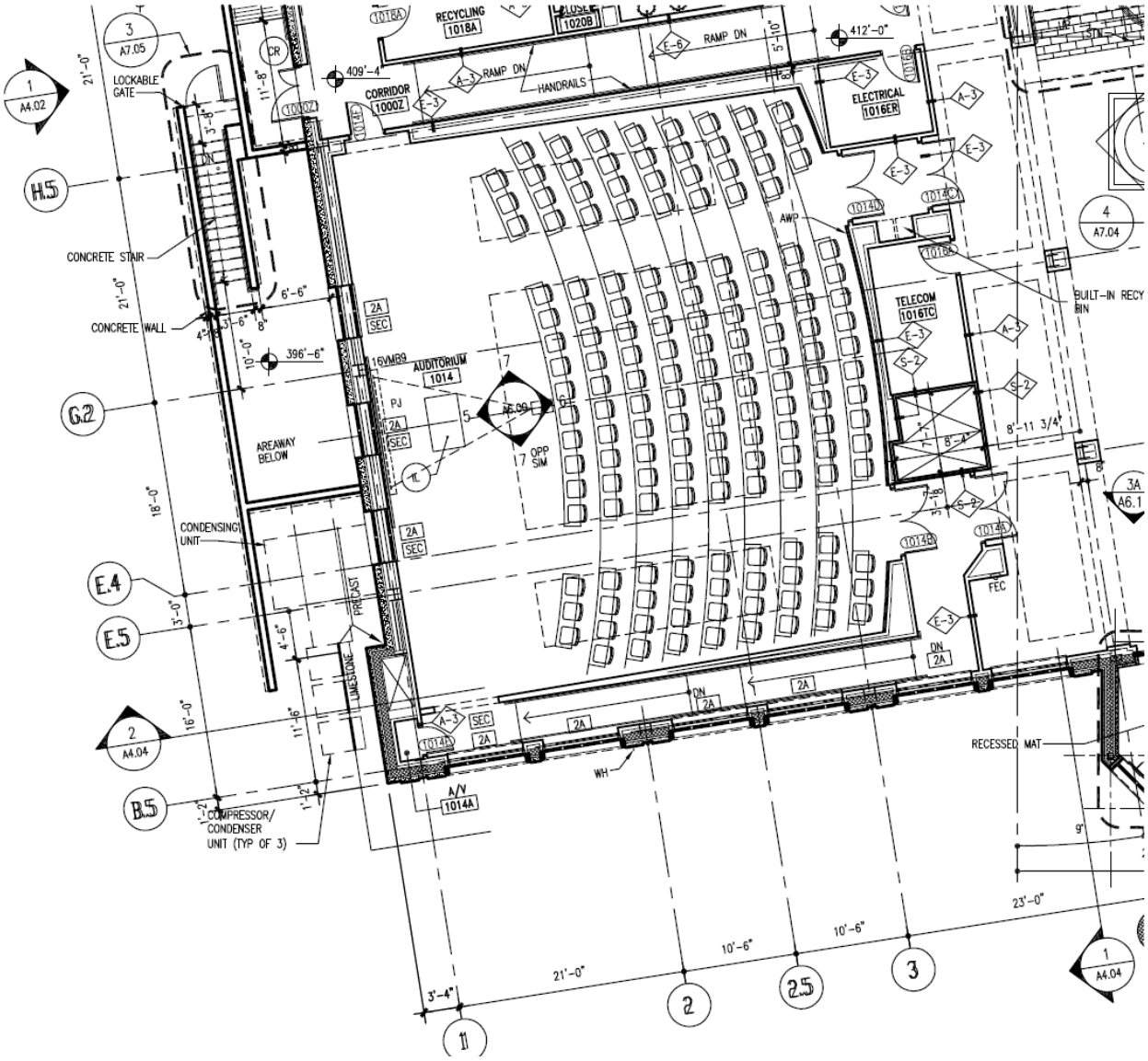
Peter | Ginny Nicholas Auditorium | Learning Center Overview

The Peter | Ginny Nicholas Auditorium | Learning Center is a large auditorium used as a classroom and meeting area. The auditorium has seating for approximately 150 people and covers an area of approximately 2700 SF. The seating and desks are permanent fixtures within the space. The ceiling is a combination of painted GWB and acoustic ceiling tiles. The ceiling is basically one level and bears no resemblance to the other "Gothic" spaces that are being redesigned. Therefore, to tie this space both architecturally and lighting wise with the Lobby and the Café, the ceiling was dropped and a cross pattern of square light coves were implemented.

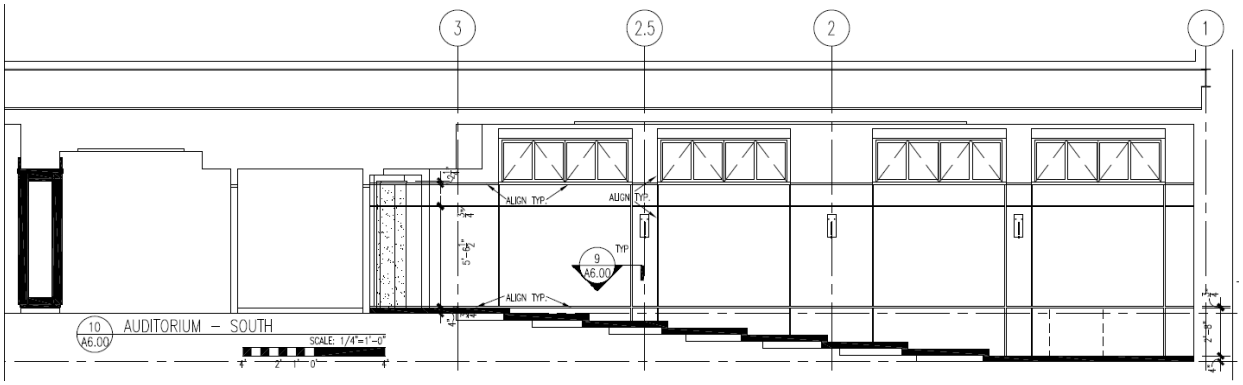
The floor gradually steps down from the back of the room towards the front of the room where the lecturer stands, with a total change of about 3 Ft. This stadium seating effect allows the farthest people in the back to be able to not only see but also hear the lecturer. The back wall curved and composed of fabric wrapped acoustic panels. The auditorium is intended to be a classroom and meeting place, and therefore requires a sense of visual clarity as well as set a studious atmosphere.

Architectural Plan

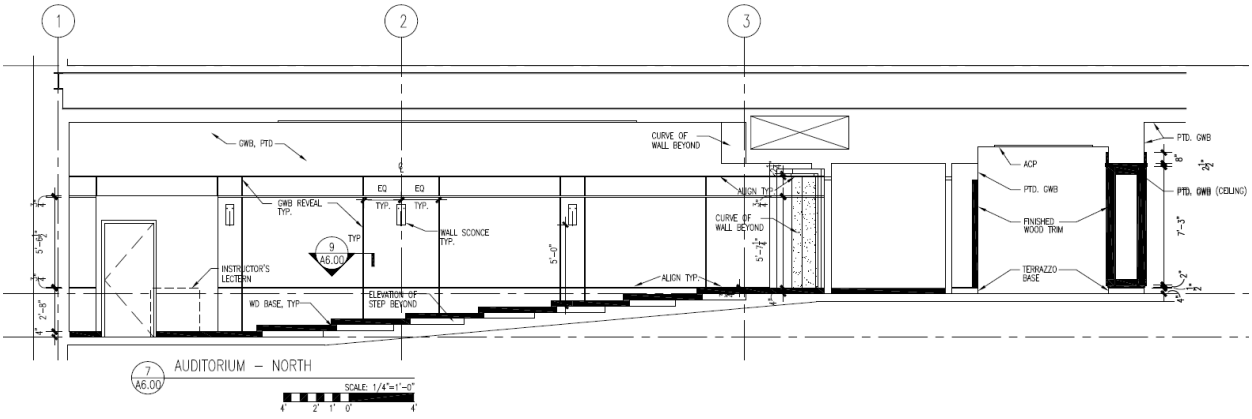


Architectural Interior Elevations

South Interior Elevation:

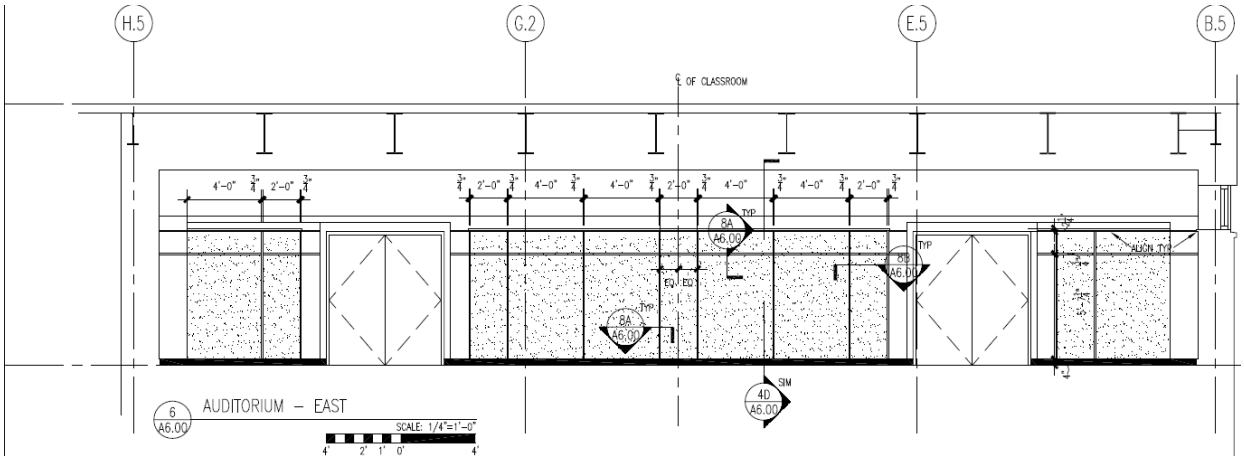


North Interior Elevation:

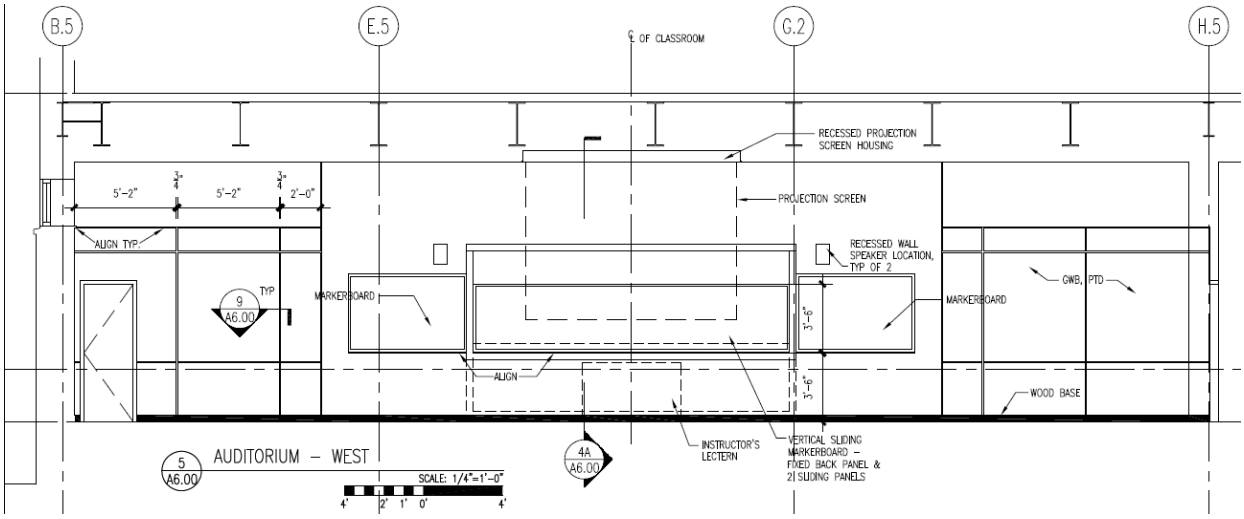


Architectural Interior Elevations (cont.)

East Interior Elevation:



West Interior Elevation:



IESNA Design Criteria

Appearance of Space and Luminaires:

The Peter & Ginny Nicholas Auditorium is intended to provide a studious atmosphere and the feeling of visual clarity, since it is a classroom. The space should also create a feeling of pleasantness to make the classroom an inviting place and a reduced institutional feel to the space. The luminaires in this space should provide a visually pleasing environment while maintaining a clean look.

Color Appearance:

The proper balance of color tone must be achieved to provide the sense of pleasantness while keeping a studious atmosphere and users of the space alert.

Daylight Integration and Controls:

The space has a series of four ribbon windows high on the west wall. This space has a projector and screen used by lectures to show presentations as well as videos. For this reason motorized shading of the windows must be considered for the daylight issues associated with projectors. The space is a classroom and meeting area and therefore requires flexible lighting and shading controls for the variety of activities that go on in this space. A scene selection control system should be used to automatically control shades and lights for a pre program scenario, like a power point presentation or a lecture on the white boards.

Glare:

Direct glare from the luminaires should be considered to ensure that the space maintains a comfortable feel for the occupants. Also, direct glare from the sun should be avoided by installing the appropriate shading and controls for the windows. Reflected glare is also a great concern, especially on the whiteboards.

Light Distribution on Surfaces:

The space should maintain a rather uniform light distribution on the desks. Accent lighting will be used on the podium to draw the audience's attention. Downlighting will be used to on the walkways as a means of showing egress, but also to add some direct light interest in the main indirect lighting system of the coves.

Light Distribution on Task Plane:

Considering the space is a classroom, visual clarity is of great importance. For this visual clarity, the task plane should have a uniform light distribution on it.

Modeling of Faces:

Being that the space is a classroom the point of focus is the professor or whoever is presenting before the class, modeling of faces is an important issue to address. Students who are able to see the eyes and facial expressions of a professor or speaker will naturally have a higher level of focus than if the face cannot be seen as well.

Points of Interest:

The main point of interest is the front of the room, which contains the lecturer, lectern, whiteboards, and projection screen. Therefore, this area must be appropriately lit for all these tasks to create the point of interest or focal point.

Shadows:

Shadows should be avoided except for the shadows created by the furniture.

Surfaces Characteristics:

The space contains a multitude of surfaces with varying characteristics. The main critical surface in this space is the surface of the whiteboards, since these have a high reflectance value to them. The other surfaces include carpeting; fabric wrapped acoustics panels; and painted GWB.

Source Task Eye Geometry:

Source task eye geometry must be considered since the space is a classroom. The location as well as the types of luminaires must be taken into consideration to reduce glare and veiling reflections.

Luminance of Surfaces:

Since the desks in the space are of a darker brown, the luminance ratio of the light color of paper to the dark color of the desks must be considered to achieve proper visual clarity.

- 3:1 Task to Adjacent Background
- 10:1 Task to Non-Adjacent Background

Other Issues:

The floor has a stepping effect to it and therefore this changes the level of the task plane, the desk surface, for every step made. This must be considered in the reading of the horizontal illuminance of the space.

IESNA Illuminance Recommendations

Horizontal

Educational Lecture Hall	300 lx (30 fc)

Vertical

Lecture Hall Whiteboard	30 lx (30 fc)

Existing Material Conditions

Surface Materials within the Space:

- Beige Thin Carpeting
  - Reflectance = 25%
- Painted White GWB Ceiling
  - Reflectance = 85%
- Beige Painted GWB Walls
  - Reflectance = 85%
- Fabric Wrapped Acoustic Wall Panels
  - Reflectance = 38%
- PLAM Wood Desks
  - Reflectance = 13%
- Wood Trim
  - Reflectance = 13%
- Brown Doors
  - Reflectance = 13%
- White Boards
  - Reflectance = 95%
  -

Other Materials within the Space:

- Beige Fabric Covered Chairs

Glazing:

- **G-5:** 1" Insulated Glass - Float
  - U-Value = 0.57
  - Transmittance = 0.55
  - Shading Coefficient = 0.45

Luminaire Schedule

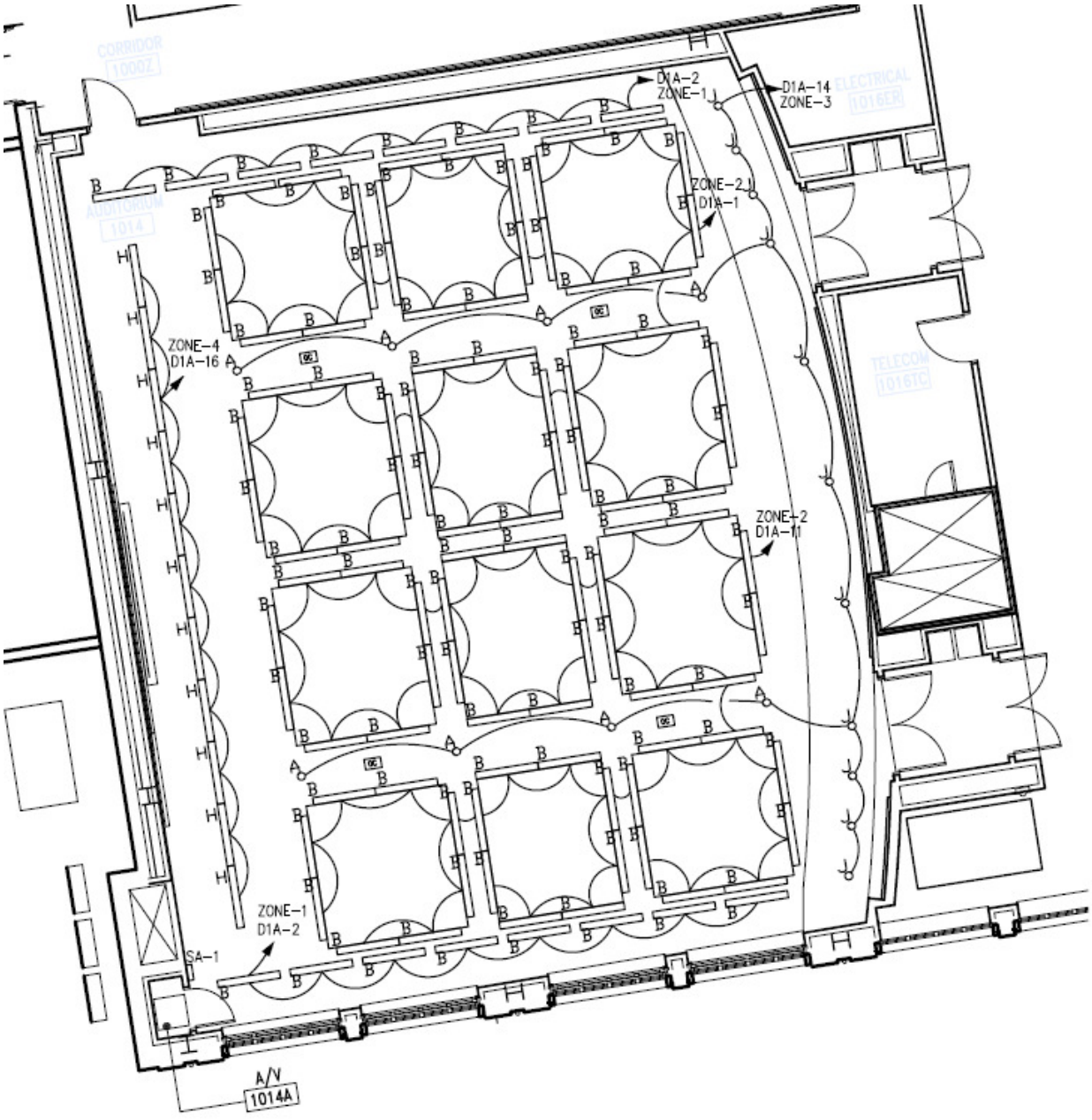
Peter & Ginny Nicholas Auditorium & Learning Center Luminaire Schedule									
Type	Mounting	Manufacturer	Catalog Number	Lamp	Input Watts	Input Amps	Volts	Ballast Catalog Number	Fixture Description
A	Ceiling Recessed	Lightolier	8021-CCLW	(1) 26W Triple Tube CFL GE F26TBX/SPX30A/4P	31	0.11	277	Advance VEZ-1T42-M2-BS	6" Direct Downlight Vetical Lamp Electronic Ballast
B	Surface Cove	Elliptipar	F306-A128-S-00-2-000	(1) 32W T8 GE F32/T8/SPX30/ECO	25	0.1	277	Advance ICN1P32LWSC	4 Ft. Assymetric Cove Electronic Ballast
H	Ceiling Recessed	Lightolier	WMRL143277PS	(1) 32W T8 GE F32/T8/SPX30/ECO	25	0.1	277	Advance IOP2S32LWSC	4 Ft. Linear Wallwasher Electronic Ballast
J	Ceiling Recessed	Lightolier	8021-CCLW	(1) 26W Triple Tube CFL GE F26TBX/SPX30A/4P	31	0.11	277	Advance IOP2S32LWSC	6" Direct Wallwasher Horizontal Lamp Electronic Ballast

Lamp Schedule

Peter & Ginny Nicholas Auditorium & Learning Center Lamp Schedule							
Type	Manufacturer	Cat. #	Rated Wattage	CRI / CCT	Rated Life	Initial Lumens	Assoc. Fixture
L1	General Electric	F26TBX/SPX30A/4P	26	82 / 3000K	12000	1710	A / J
L2	General Electric	F32/T8/SPX30/ECO	32	86 / 3000K	20000	2950	B / H

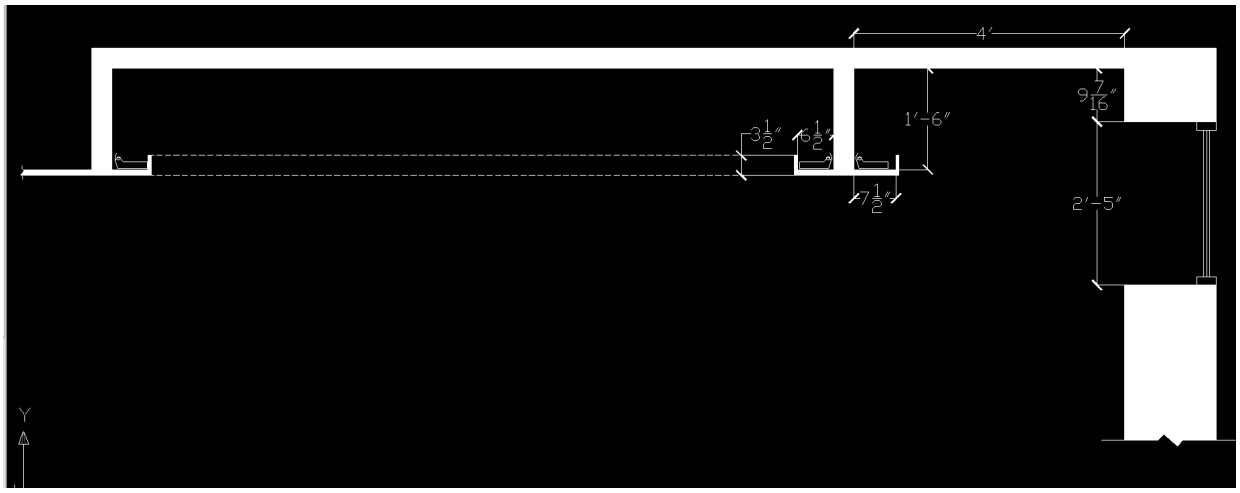
Notes: (1) please refer to Appendix A for all product cut sheets and complete schedules.
(2) Lighting control intent is located in the electrical depth section of this report.

Lighting Plan



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

Cove Lighting System Detail (typ.)



Light Loss Factors

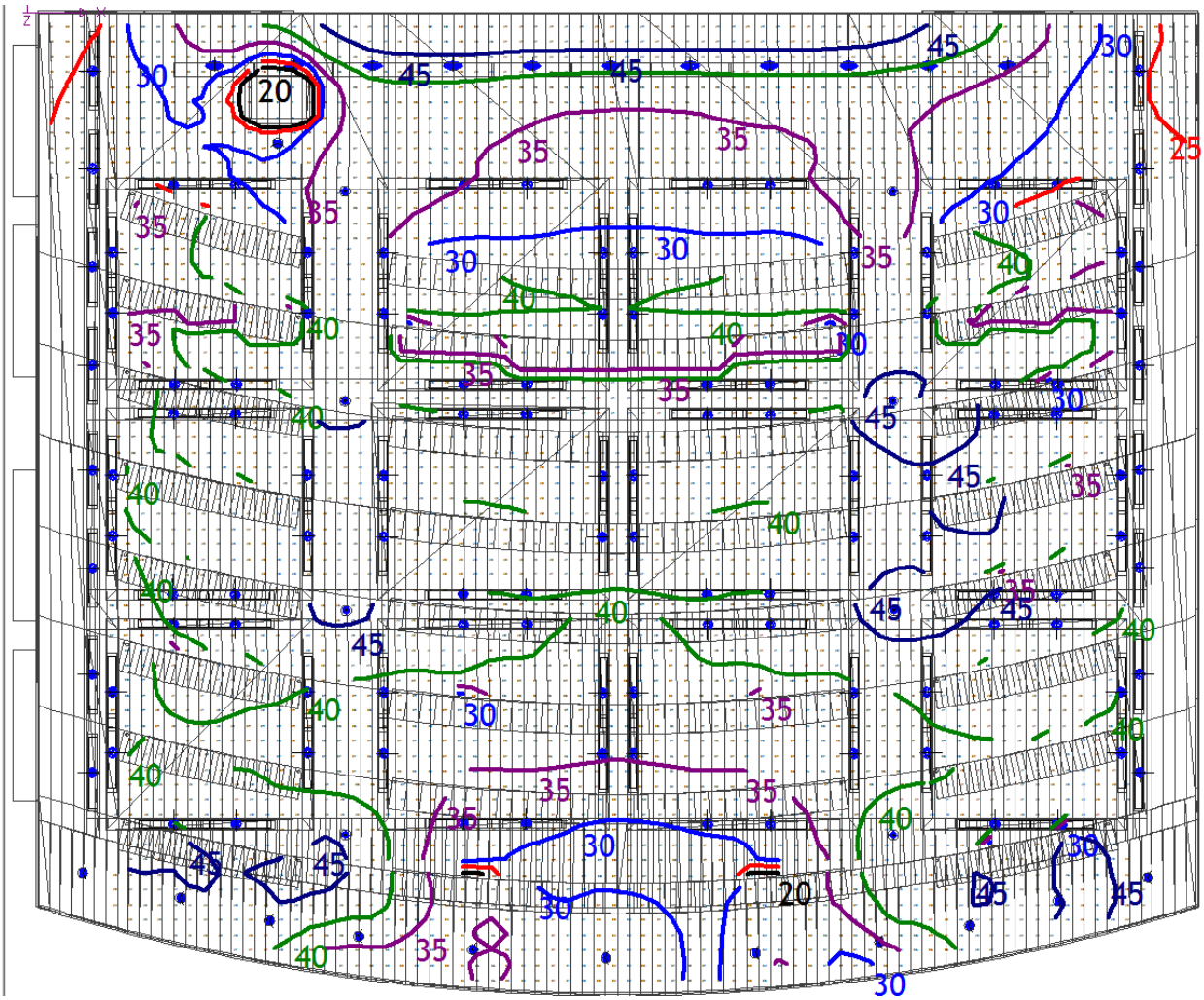
Peter & Ginny Nicholas Auditorium & Learning Center LLF													
Type	Fixture Description	Lamp	Mean Lumens [Initial Lumens]	LLD	Room Properties (Ft.)		RCR	Assumptions	Expected Dirt Depreciation	RSDD	LDD	BF	Total LLF
A	26W CFL 6" Open Maintenance **Category IV** **Direct** Downlight	(1) 26W Triple Tube CFL GE F26TBX/SPX30A/4P	1440 / 1710	0.842	Height 11.5; Length 46; Width 57.33; Perimeter 204; Area (ft^2) 2704		2.17	Clean; 12 Months Cleaning Cycle	12	0.978	0.89	1.05	0.77
B	32W T8 Open top Closed Bottom Maintenance **Category VI** Assymetric Cove **Indirect** Uplight	(1) 32W T8 GE F32/T8/SPX30/ECO	2950 / 2800	1.054	Height 11.5; Length 46; Width 57.33; Perimeter 204; Area (ft^2) 2704		2.17	Clean; 12 Month Cleaning Cycle	12	0.89	0.87	0.73	0.60
H	32W T8 Closed Top Open Bottom Maintenance **Category IV** Linear Wallwasher	(1) 32W T8 GE F32T8/SPX30/ECO	2950 / 2800	1.054	Height 11.5; Length 46; Width 57.33; Perimeter 204; Area (ft^2) 2704		2.17	Clean; 12 Month Cleaning Cycle	12	0.978	0.89	0.73	0.67
J	26W CFL 6" Open Maintenance **Category IV** **Direct** Wallwasher	(1) 26W Triple Tube CFL GE F26TBX/SPX30A/4P	1440 / 1710	0.842	Height 11.5; Length 46; Width 57.33; Perimeter 204; Area (ft^2) 2704		2.17	Clean; 12 Months Cleaning Cycle	12	0.978	0.89	1.05	0.77

Control Scenes

Control Scenes				
Scenes:	**Zone-1**	**Zone-2**	**Zone-3**	**Zone-4**
Projector	OFF	OFF	Dimmed to 20%	OFF
Speaker	1/2 Switched ON	1/2 Switched ON	Dimmed to 50%	All ON
Class/Exam	All ON	All ON	All ON	All ON

Note: Controlled by a Graffic Eye 3000

Illuminance Data



Peter & Ginny Nicholas Auditorium & Learning Center-Illuminance Results					
	Average Illuminance	Maximum Illuminance	Minimum Illuminance	Avg/Min	Max/Min
Floor in Front of Room	33.8	50.0	0.0	--	--
First Row of Desks	40.1	44.0	28.0	1.4	1.6
Second Row of Desks	39.6	45.0	28.0	1.4	1.6
Third Row of Desks	42.7	46.0	34.0	1.3	1.4
Fourth Row of Desks	42.6	46.0	33.0	1.3	1.4
Fifth Row of Desks	41.4	47.0	29.0	1.4	1.6
Sixth Row of Desks	38.4	43.0	31.0	1.2	1.4
Seventh Row of Desks	36.8	46.0	13.0	1.9	2.4
Eighth Row of Desks	38.0	46.0	28.0	1.4	1.6

Note: All desk calculations were taken from the top of the desk, 2.5 ft AFF

Raytraced Renderings

Looking Southeast from Front of Room:

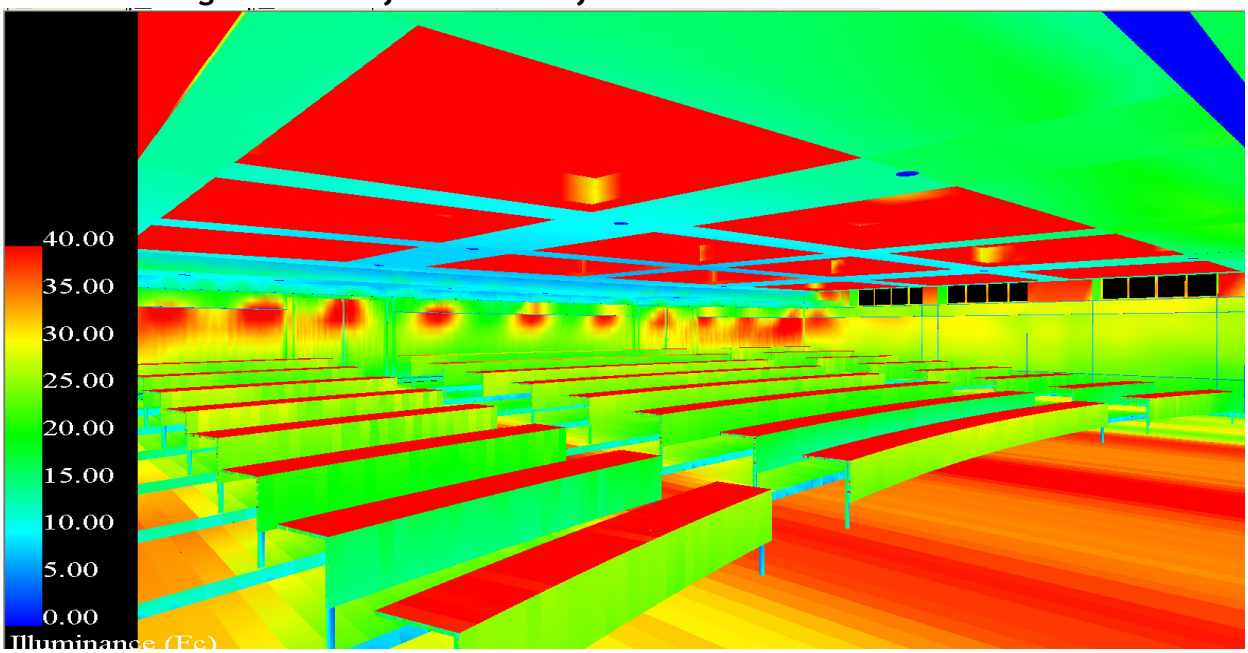
Looking Northeast from Front of Room:

Looking South-Southeast from Back of Room:

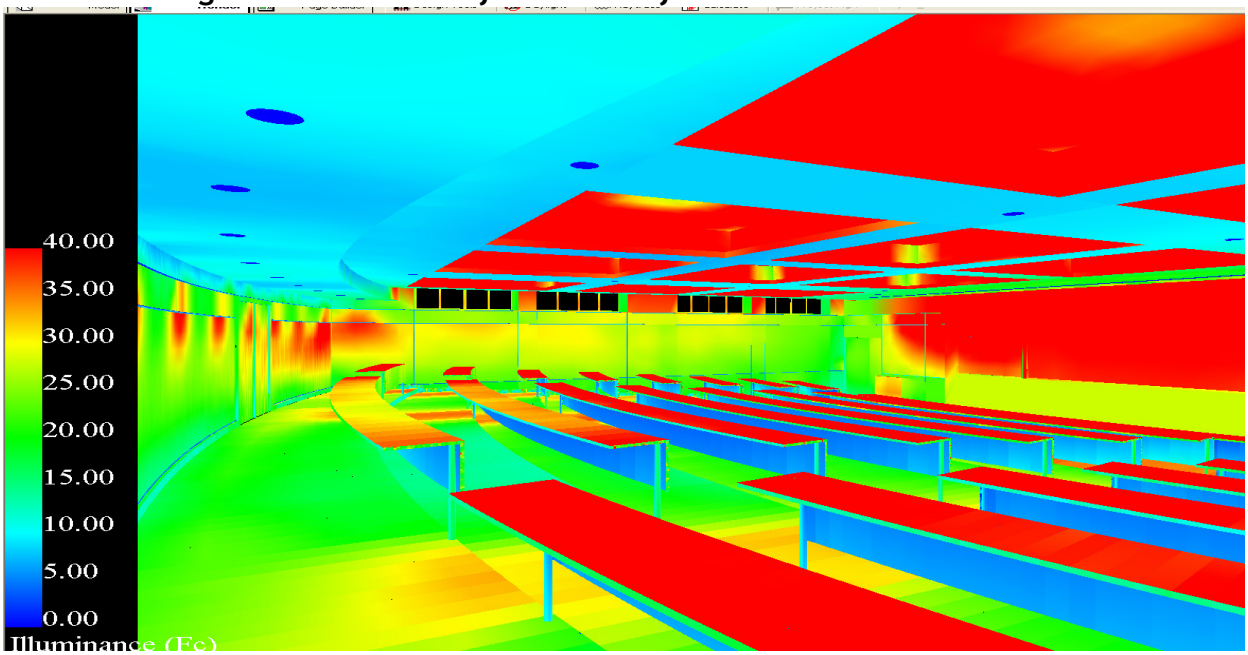
Looking South-Southeast from Back of Room:

Pseudo Color Renderings

Looking Southeast from Front of Room:



Looking South-Southeast from Back of Room:



Power Density

Peter & Ginny Nicholas Auditorium & Learning Center 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
A	8	31	248			
B	112	25	2800			
H	11	25	275			
J	11	31	341			
			3664	2704	1.36	1.40

Evaluation

The lighting system that has been implemented meets the basic illumination requirements recommended in the IESNA. The design intent for changing the ceiling was to tie the architectural sense of the lobby together with this space. The cove system provides a clean look to the space as one looks out across the ceiling. The cove lighting system provides the main lighting for the space. However, since the cove lighting system is totally indirect lighting it creates what is known as a cloudy sky effect. This cloudy sky effect was avoided by introducing direct downlight atop the walkways. By placing direct light over the walkways, it increases the level of illumination and thereby providing a natural means of way finding. Finally, the front of the room, mainly the podium and whiteboards, were lit to a higher illuminance. The desired hierarchy of light for the space was successfully achieved.