

Walter Nichols
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Auditorium Classroom/Video Conferencing Room

Design Concept

The original purpose of this space was to act as both a classroom as well as a place to hold video conferencing via a web cam and net meeting for students to take the class online. After talking with my contact at Penn State Altoona, I was told that this room was no longer going to be used for video conferencing via net meeting. A classroom upstairs was going to take over the responsibility if it was needed. I designed the space so it would be ok to do video conferencing via net meeting before I found this information out, but since it won't be used for that purpose anymore, I will not be going into depth about it.

The space has a 15' high ceiling, and the seating is raked to a total of 2.5' higher in the rear than the front. Since the room was fairly large and its uses were wide spread, I wanted to keep my lighting design for this space simple and able to function well under multiple scenarios. For that reason, I decided to use 2'x4' lensed troffers for my main light source. Lensed troffers are efficient, supply a decent amount of light, and work well for most scenarios. Along the outer perimeter, I also have recessed wall washers. The wall washers serve two purposes. They make the room seem larger, and they also help to guide you around the room. Finally, I also have two track-mounted spotlights in the front aimed onto the teacher's podium. This was for the original plans of video conferencing, but can still be used if some extra punch is needed. The fixtures are adjustable as well, so they could potentially be aimed at something else if that was wanted.

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Design Criteria

System Control and Flexibility

The lighting system was originally designed with video conferencing in mind, so the control system was taken into consideration. There is a dimming panel located inside the room with all of the fixtures hooked up to it. The panel has multiple programmable scene selections, as well as the ability to dim all of the lighting in the room.

Appearance of Space

My goal for appearance of the space was to keep it simple and multifunctional. The 2'x4' troffers and recessed wallwashers do that. The ceiling is white, and the troffers are lensed with a somewhat stained white lense, so the ceiling should look relatively clean and smooth.

Accent Issues

Since the space is so large, accenting the walls with wallwashers is important to help lead you around the room and down the steps since the floor is raked. The wallwashers in the front also help to illuminate the front blackboard so reading and taking notes is easier.

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IES Criteria:

Horizontal:

Note taking: 30 FC

Reading 10 VDT screens: 3 FC

Vertical:

Reading off of a blackboard: 50 FC

Facial Rendering: 50 FC

Power Allowances from ASHREA 90.1:

1.4-1.6 w/ft²

Table 9-B – Common Space Types for Space-by-Space Method

| <i>Space Type</i> | <i>W/ft² Range</i> | <i>Space Type</i> | <i>W/ft² Range</i> |
|-----------------------------------|-------------------------------|------------------------|-------------------------------|
| Office, enclosed | 1.5 | Dining area | 1.0 to 2.2 |
| Office, open | 1.3 | Foot preparation | 2.2 |
| Conference, meeting, multipurpose | 1.5 | Restrooms | 1.0 |
| Classroom, lecture, training | 1.4 to 1.6 | Corridor, transition | 0.5 to 1.6 |
| Audience, seating area | 0.5 to 3.2 | Stairs, active | 0.9 |
| Lobby | 0.8 to 1.8 | Storage, active | 1.1 to 2.9 |
| Atrium, first three floors | 1.3 | Storage, inactive | 0.3 to 1.4 |
| Atrium, each additional floor | 0.2 | Electrical, mechanical | 1.3 |
| Lounge, recreation | 1.4 | | |

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Fixture Schedule (see appendices for cut sheets and light loss factors):

| Type | Description | Lamp | Voltage | Wattage | Ballast | Quantity |
|------|----------------------|--------------------------|---------|---------|----------|----------|
| C1 | 2'x4' lensed troffer | (2) 32w T8 | 277 | 59 | Electric | 16 |
| C2 | Recessed wallwasher | (1) 54w T5HO | 277 | 62 | Electric | 13 |
| C3 | Track mounted spot | (1) A65 150 Incandescent | 277 | 150 | NA | 2 |

16 2x4 fixtures * 59 watts/fixture = 944 watts @ 277v

13 wallwasher fixtures * 62 watts/fixture = 806 watts @ 277v

2 spotlight fixtures * 150 watts/fixture = 300 watts @ 277v

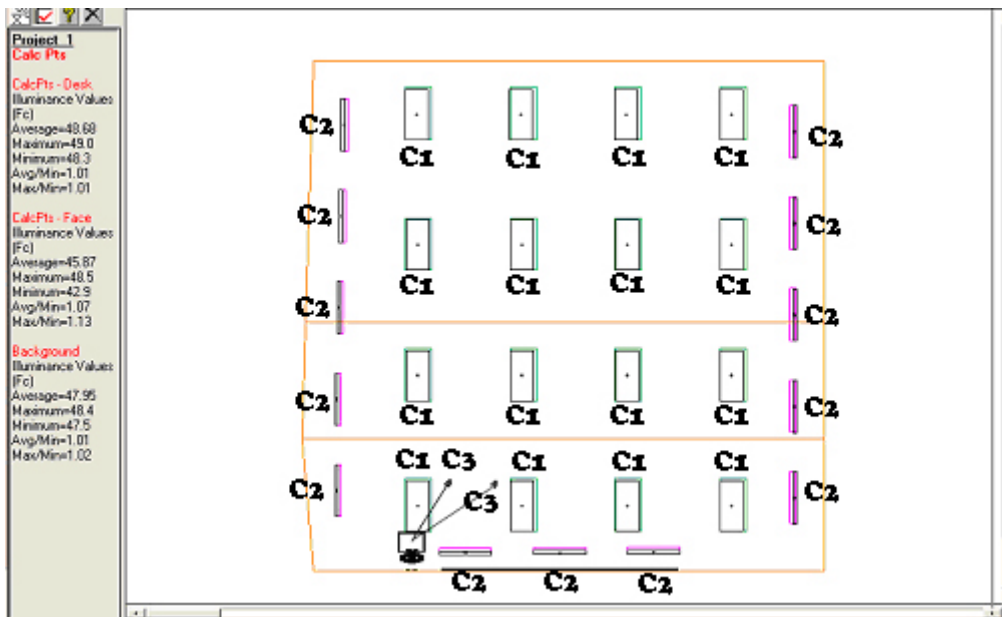
Power density = 2050 watts / 1560 ft² = 1.31 watts/ft²

Therefore, power density is ok.

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Lighting Plan



Note: C1, C2, and C3 go to Panel SD
10 of C2 go to emergency Panel NEH

Conclusion

The lecture hall provides a lighting solution that supplies enough light into the space while having the ability to be customizable by the user via the dimming panel. The solution is relatively simple, but the possibilities are complex and close to endless.