

Technical Report 1 Part 2: Existing Conditions and Design Criteria

Reva and David Logan Center for the Arts, Chicago, IL

Sean Kim Lighting/Electrical option

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9/16/2013



Executive Summary

The *Reva and David Logan Center for the Arts* building is a new multidisciplinary arts center at the University of Chicago. The building provides a dynamic mix of the spaces to create a rich environment across the artistic spectrum and collaboration.

The purpose of this document is to describe about the existing lighting conditions of the four spaces where the Performance Hall, Performance Penthouse, Main Lobby, and Courtyard. Each of these spaces is analyzed based on the existing space condition, existing lighting system, design consideration with criteria, and design evaluation. The design criteria, and energy code is referenced from the recommendation by the Illuminating Engineering Society, and ASHREA standard 90.1. Since no specific information about the reflectance value of the interior finishes, they are assumed based on their color from AGI32.

The overall lighting solution of *Reva and David Logan Center for the Arts* is very energy efficiency. By taking advantage of the natural light with glazed curtain wall system, it enhances the interior environments and provides high color rendering to the spaces. Although the current lighting design is appropriate for this art center building, there is potential opportunity to improve in terms of lighting aesthetics, quality, and design schema.

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Building Overview

Building Name: Reva and David Logan Center for the Arts

Location and Site: 915 E 60th St, Chicago, IL, 60637

Building Occupant Name: University of Chicago

Occupancy or function types: Multidisciplinary arts center

Size: 184,000 square foot

Number of stories above grade: 11-story tower with 3-story adjacent building.

Primary project team:

Owner: University of Chicago

Project Manager: Eric Eichler, Senior Project manager at The University of Chicago

Design Architect: Tod Williams Billie Tsien Architects LLP www.twbta.com

Associate Architect: Holabrid & Root www.holabird.com

Structural Engineer: Severud Associates www.severud.com

MEP Engineer: Ambrosino Depinto & Schmieder Consulting Engineers www.adsce.com

Lighting Design: Renfro Design Group www.renfrodesign.com

Landscape Architect: Hargreaves Associates www.hargreaves.com

Civil Engineer: David Mason & Associates www.davidmason.com

LEED Consultant: Steven Winter Associates, Inc www.swinter.com

Construction Manager: Turner Construction, LLC www.turnerconstruction.com

AGI File Location: Y:\Kim\Tech Report Part2\Lobby.AGI

Y:\Kim\Tech Report Part2\Performance Penthouse.AGI

Performance Hall

1.1 Existing Conditions

The space of performance hall, located on the first floor, is a largest theater with a 474-seat. This space is used primarily for concert, performance, and full orchestra. With drop-down shades along the perimeter of the ceiling, it also allows the acoustics to be altered for music, dance or film. The specific dimensions of the performance hall are provided on the figure 1.1 thru 1.5.

Dimension = W 64' (backward), W 45' - 3 3/8' (forward)
L 102' - 6"
H 21' - 6" (lowest), H 35" (highest)

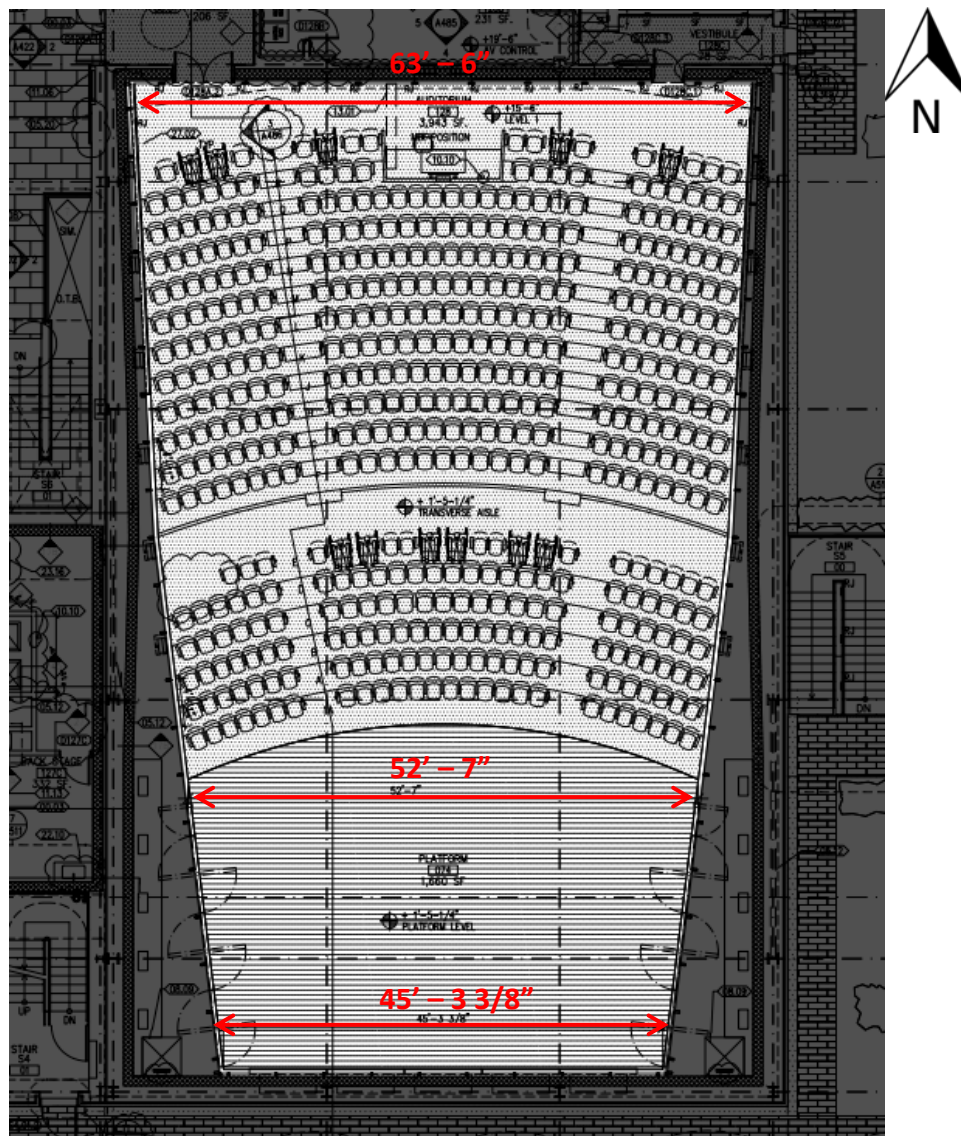


Figure 1.1 – Performance Hall Floor Plan



Figure 1.2 – Performance Hall West Elevation

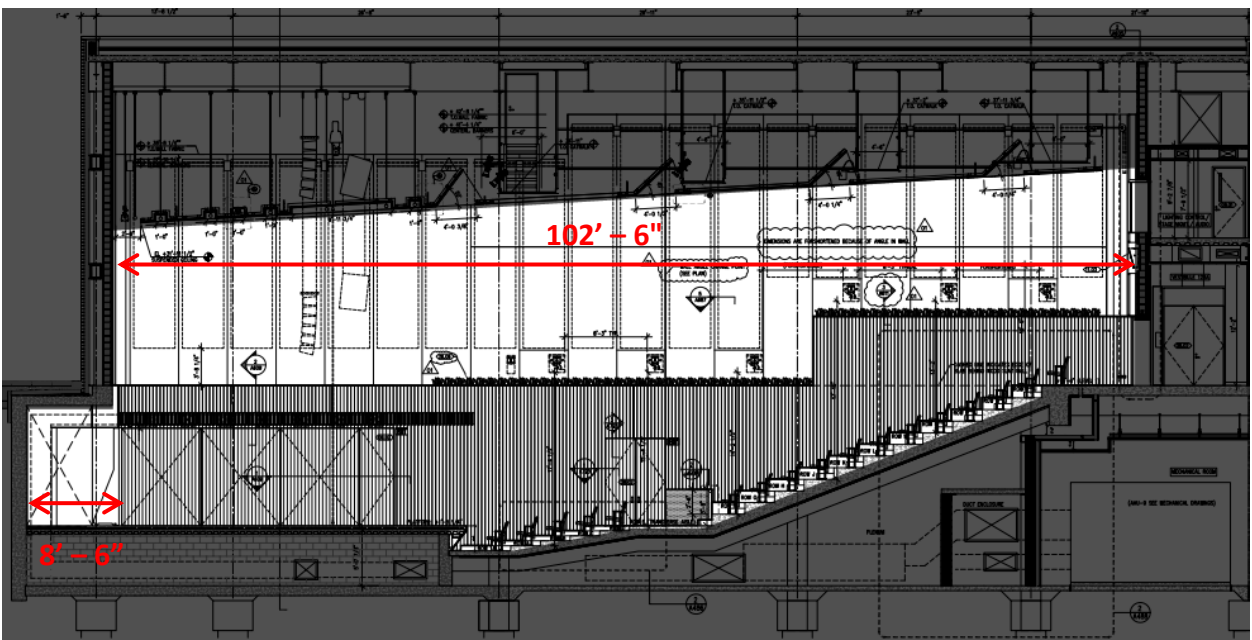


Figure 1.3 – Performance Hall East Elevation

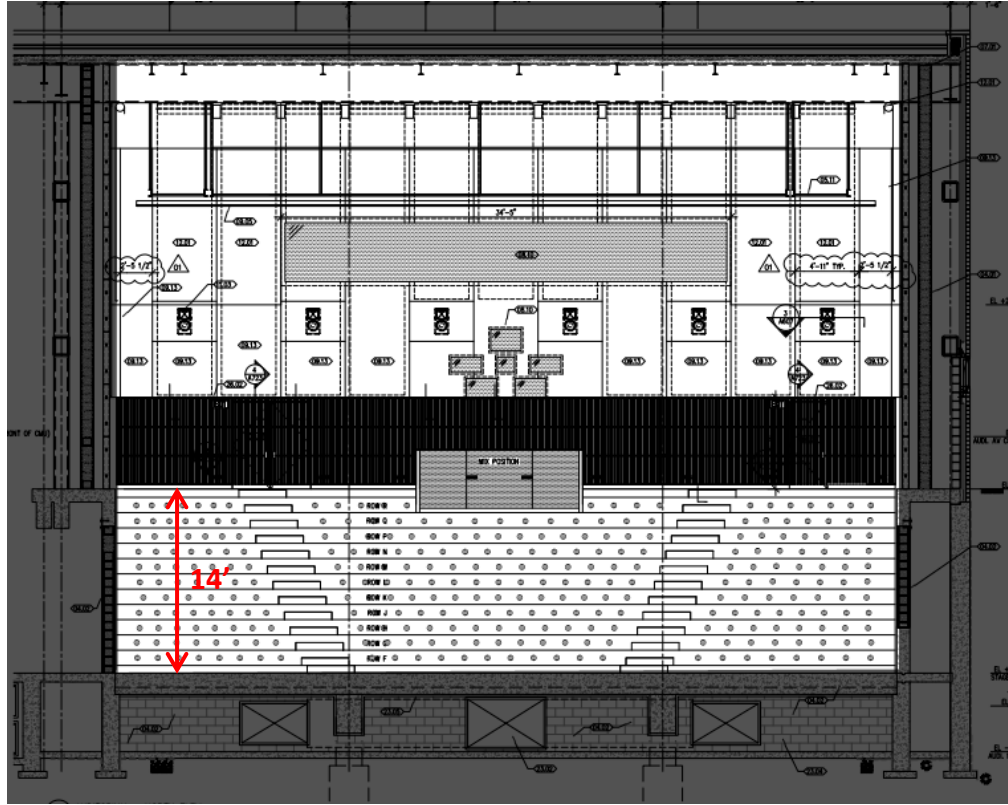


Figure 1.4 – Performance Hall North Elevation

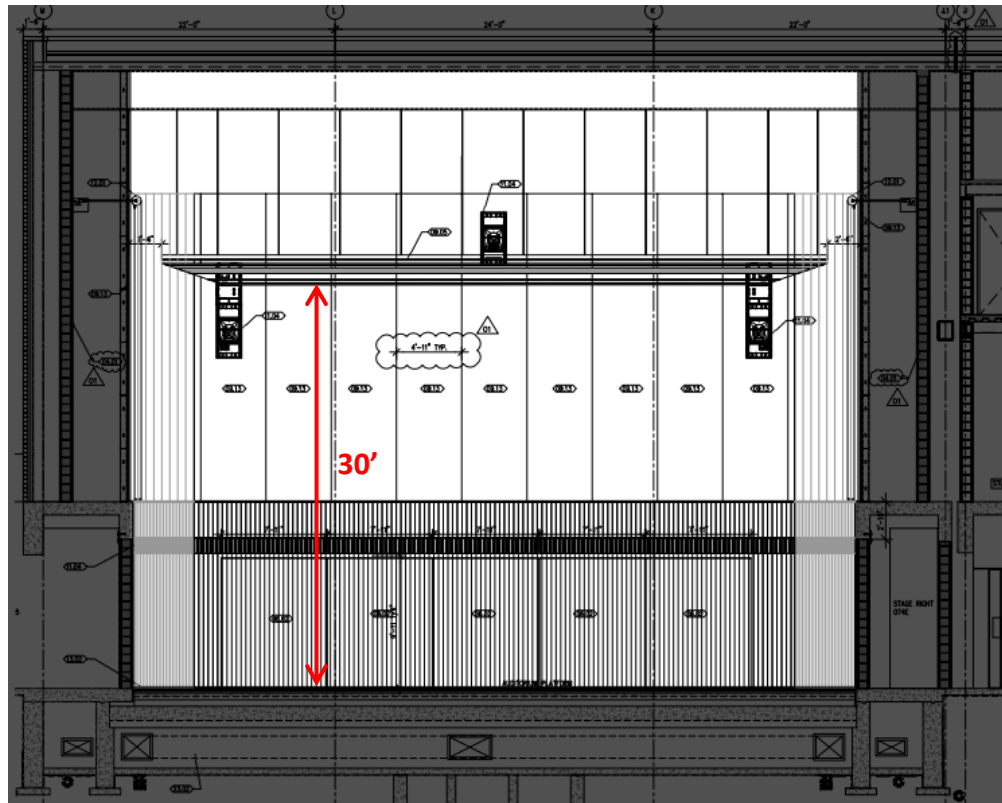


Figure 1.5 – Performance Hall South Elevation

Interior Finish

The space of performance hall is divided into the auditorium and the platform. The wall and ceilings' finishes of auditorium and platform are same except the floor. The epoxy terrazzo finish with low reflectance is used on the floor of the auditorium, and the wood finish is used on the floor of the platform. The table 1.1 describes the finishes for the each surface.

Space	Surface	Description	Reflectance (Assumed)
Auditorium	Floor	3/8" Epoxy Terrazzo Finish with 3/4" Reveal	0.2
	Wall	TYPE 2 - Acoustically Transparent Fabric Wall System with Support frame	0.5
		Perforated Wood Sliding Panels	0.35
	Ceiling	TYPE 1 - Fabric Over Nomex Reflector Fabric	0.6
Type 1 - Fabric Over GWB		0.6	
Platform	Floor	Resilient Slide Wood floor	0.5
	Wall	TYPE 2 - Acoustically Transparent Fabric Wall System with Support frame	0.5
		Perforated Wood Sliding Panels	0.35
	Ceiling	TYPE 1 - Fabric Over Nomex Reflector Fabric	0.6
Type 1 - Fabric Over GWB		0.6	

Table 1.1 – Interior Finish Schedule

Furniture

In the Performance Hall, the fixed seats and drop-down black shades are primary furniture that affect to the lighting condition. The reflectance of the fixed seat is 0.3, and the drop-down shade is 0. The purpose of the shade is to hide the transparent fabric wall, and It is used when the space need to be dark such as music, and film.



Image 1.1 – Performance Hall [www.lynnbecker.com]

Glazing

The sound control window is placed on the rear wall of the Performance Hall. As you see the figure 1.6 and 1.7, the window which is indicated by blue-dashed line is installed for the follow-spot room. This window consists of 1/2" butt glazed tempered vision glass STC 45 rating, 1'-8" air, and 1" insulated glazing unit. The dimension of the window is 34'-5" x 4'-6". The window which is indicated by red-dashed line is installed for the AV control room. This window consists of 6mm optical glass with 6 degrees angled.

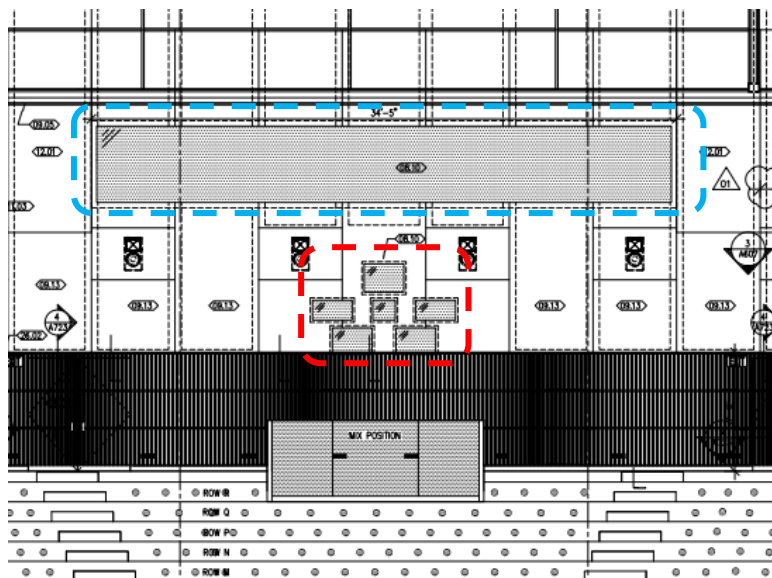


Figure 1.6 – Rear wall of Performance Hall

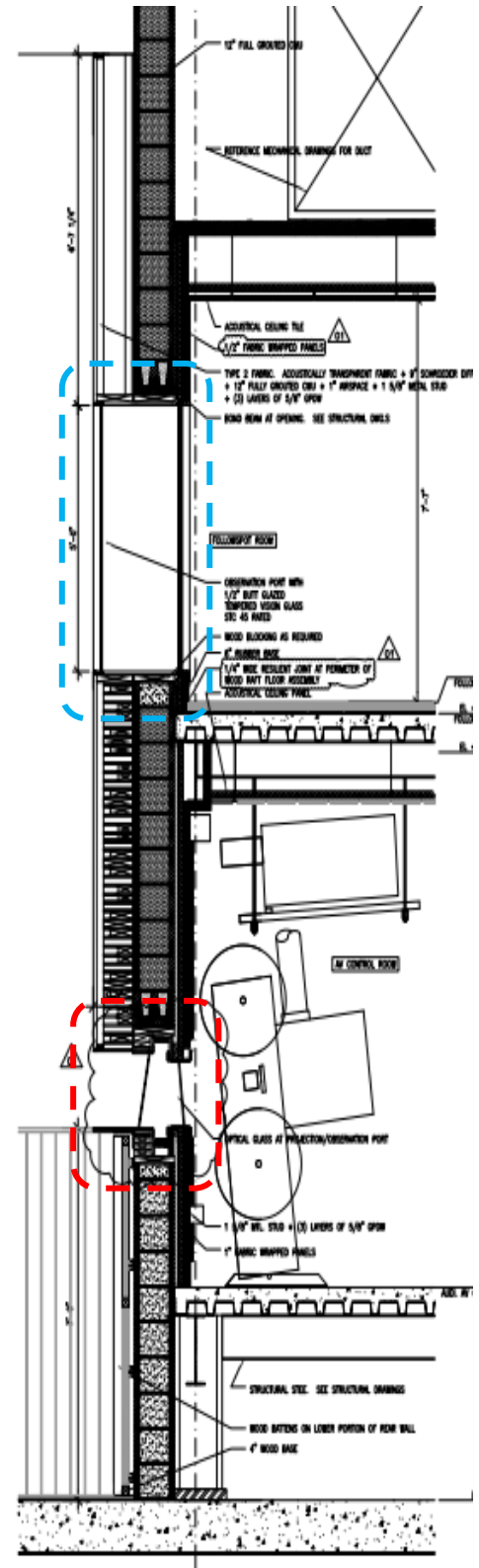


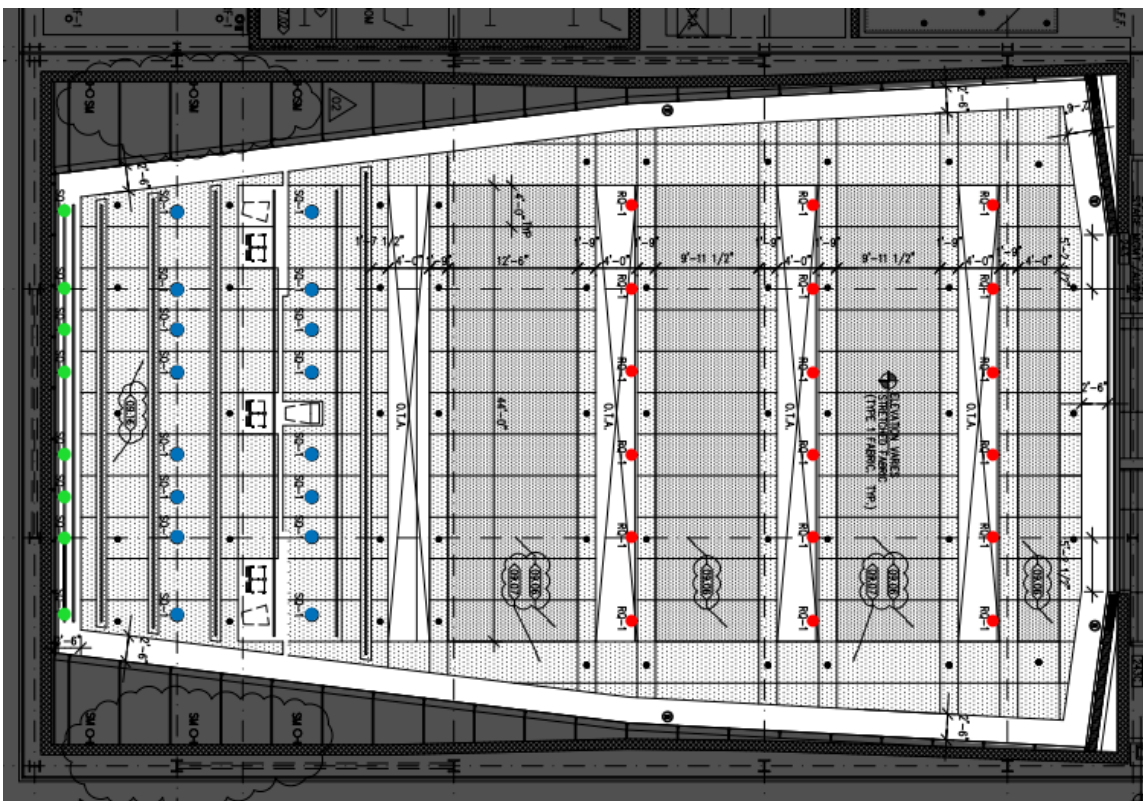
Figure 1.7 – Rear wall Section of Performance Hall

1.2 Existing Lighting Conditions

The primary Lighting system of the Performance Hall could be simplified into two types of fixture. The type RQ-1 with PAR38 lamp provides the ambient light on the theater’s seats and aisles for the audience. The type SQ with HPL lamp provides ambient and orchestra/stage light on the platform. There is another light fixture installed along the perimeter of the side walls (refer to image 1.1), but no information is provided on the specification documents and the fixture schedule.

SYMBOL	TYPE	DESCRIPTION	MOUNTING	MANUFACTURER	CATALOG NUMBER	LAMPS	WATTS
●	RQ-1	RECESSED TUNGSTEN HALOGEN 100W PAR38 ADJUSTABLE ACCENT	SURFACE MOUNTED	EDISON PRICE LIGHTING	L308-YK-TR-BLK	250W PAR38/HA L/FL30	250
●	SQ-1	ADJUSTABLE ORCHESTRA LIGHT - THEATRE TYPE PAR FIXTURE. MULTIPLE LENSES FOR FLEXIBLE FOCUS NEEDS. INSTALL WFL LENS AND DELIVER REMAINING LENSES TO OWNER.	PIPE	ELECTRONIC THEATRE CONTROLS	S4 - PAR EA - 400SC - 400CC - B 400LS4	HPL - 575/115X	575
●	SQ	TRACKLIGHTS ON SINGLE CIRCUIT, SURFACE TRACK-CONTROL ROOMS FLATBACK TRACKHEAD FIXTURE WITH BLACK BAFFLE, LEXAN POLYCARBONATE CASING. ATTACHES ELECTRICALLY AND MECHANICALLY ANYWHERE ALONG TRACK. TRACK, HEADS, AND ACCESSORIES FINISHED BLACK.	CEILING RECESSED	ELECTRONIC THEATRE CONTROLS. AE: CITY THEATRICAL INC.	S4 - PAR EA - 400SC - 400CC - B 400LS4	HPL - 575/115X	575

Table 1.2 – Performance Hall Fixture Schedule 1



The secondary lighting system of the Performance Hall is only for orchestra/stage lighting. As you see the figure 1.9, this lighting system is located on the above the ceiling and provides light on the stage.



SYMBOL	TYPE	DESCRIPTION	MOUNTING	MANUFACTURER	CATALOG NUMBER	LAMPS	WATTS
	SR	ADJUSTABLE FRONT ORCHESTRA LIGHT - THEATRE TYPE ELLIPSOIDAL FIXTURE WITH 36 DEGREES SPREAD.	PIPE	ELECTRONIC THEATRE CONTROLS	436J-400SC-B	HPL-575/115X	575
	SR-1	ADJUSTABLE FRONT ORCHESTRA LIGHT - THEATRE TYPE ELLIPSOIDAL FIXTURE WITH 19 DEGREES SPREAD.	PIPE	ELECTRONIC THEATRE CONTROLS	436J-400SC-B	HPL-575/115X	575

Table 1.3 – Performance Hall Fixture Schedule 2

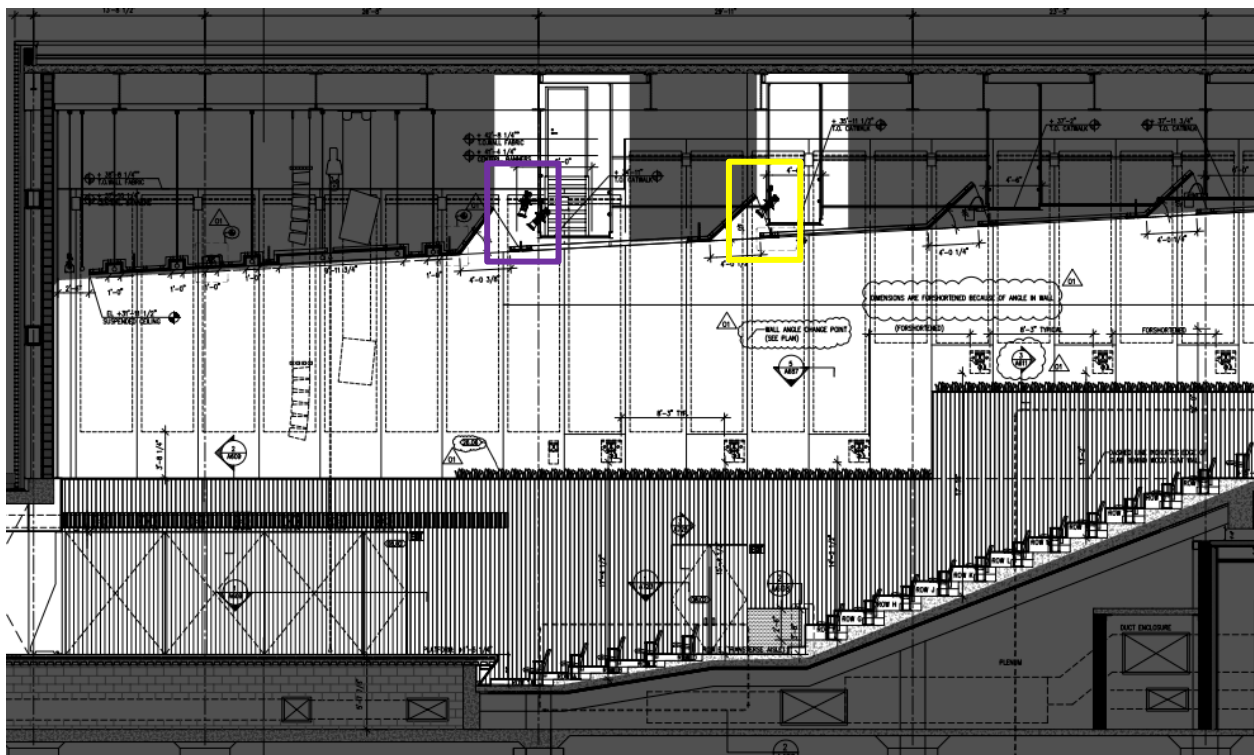


Figure 1.9 – Performance Hall East Elevation

1.3 Design Considerations and Criteria

As the theater/auditorium serves different functions such as film, performance, music, and orchestra, the different lighting requirements will be considered with the flexibility of design, control and installation. The lighting in the theater should have excellent dimming range and very high color rendering (CRI≥85). The aisle lighting is required for the safety, and convenient access into and out of the space.

Application Type	E _h (lux)	E _v (lux)	Avg:Min	Note
Audience - During production	2	1	2:1	E _h @floor, E _v @5' AFF
Audience - Pre/Post show, intermissions	100	30	2:1	E _h @floor, E _v @5' AFF
Circulation - During Production	2	4	5:1/2:1	E _h @floor, E _v @5' AFF
Circulation - Pre/Post show, intermissions	100	30	2:1	E _h @floor, E _v @5' AFF
Stage	As designed by theater lighting designer			

Table 1.4 – Illuminance Recommendation [IES Handbook 10th Edition (Table28.2)]

Application Type	Power Density (W/ft ²)
Audience/Seating Area for Performing Arts Theater	2.6

Table 1.5 – Energy Allowance [ASHRAE standard 90.1]

1.4 Design Evaluation

The existing theater lighting is flexible by using drop-down shade. The black shade is along the perimeter of the ceiling, and provides completely dark atmosphere into the space for the films, music, and dance. To give the light on the audience, the ceiling recessed fixture is used with control system. Also, the custom fixture (no information provided) is installed in the perimeter of each side walls to enhance the wall interior finishes. Since the performance hall is required various and flexible lighting design for the different performances, the lighting control system will be considered to provide three different lighting design concept with architectural lighting.



Image 1.2 – Performance Hall [arts.uchicago.edu]

Performance Penthouse

2.1 Existing Conditions

The Performance Penthouse is located on the ninth floor of the tower. This space houses performances, dance, class, seminars and banquets, with reconfigurable seating for up to 100 people. The full-height windows are located on the North-East, and allow daylight into the space with offering spectacular views along a vista. The specific dimensions of the performance Penthouse are provided on the figure 2.1 thru 2.5.

- Dimension: W 34' x L 47' x 30'
- Area: 1,657 SF

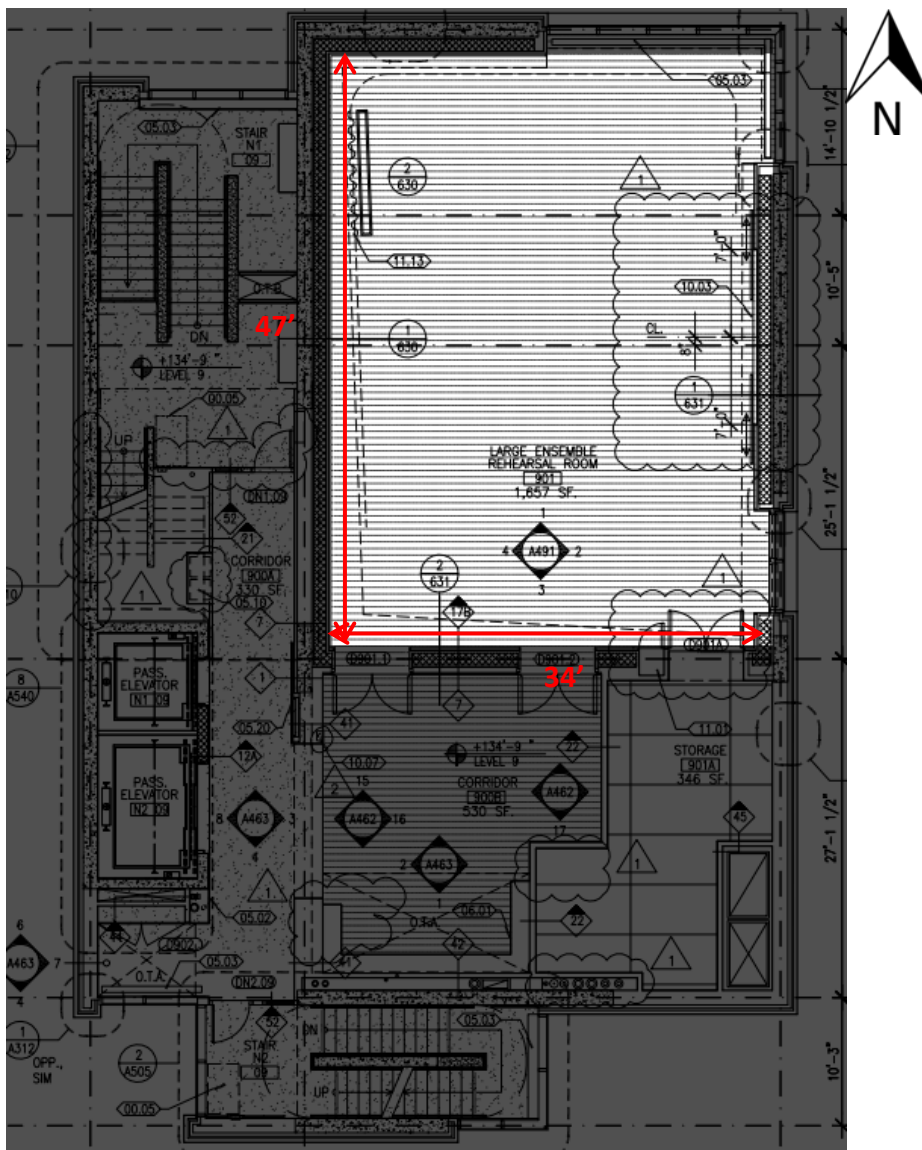


Figure 2.1 – Performance Penthouse Floor Plan – 7th Floor of Tower

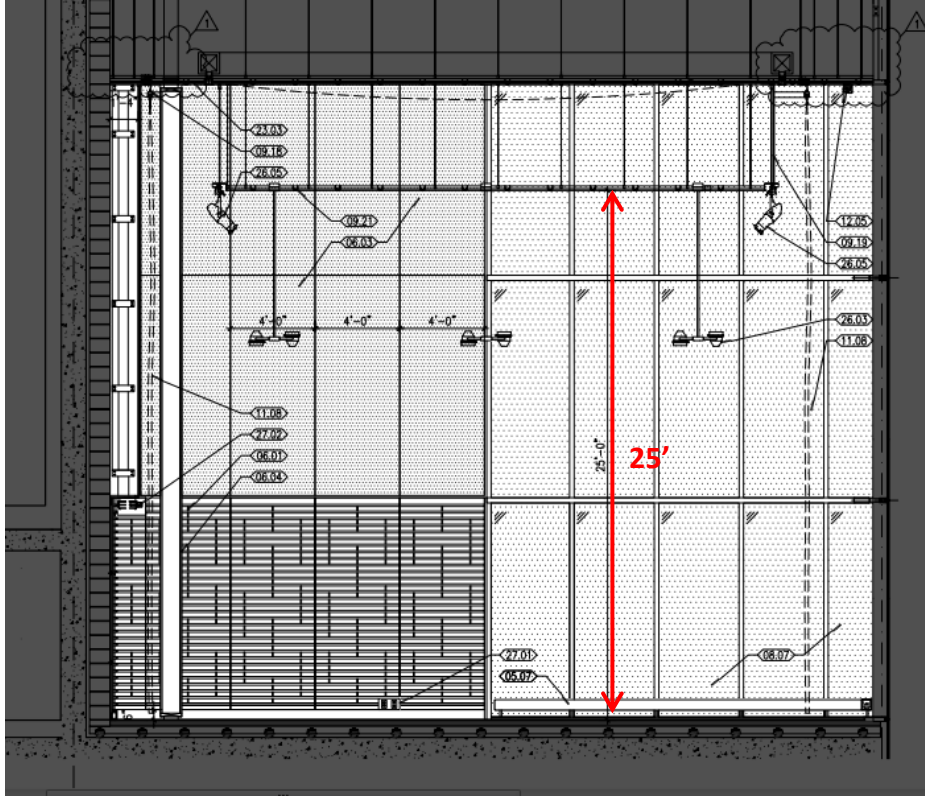


Figure 2.2 – Performance Penthouse North Elevation

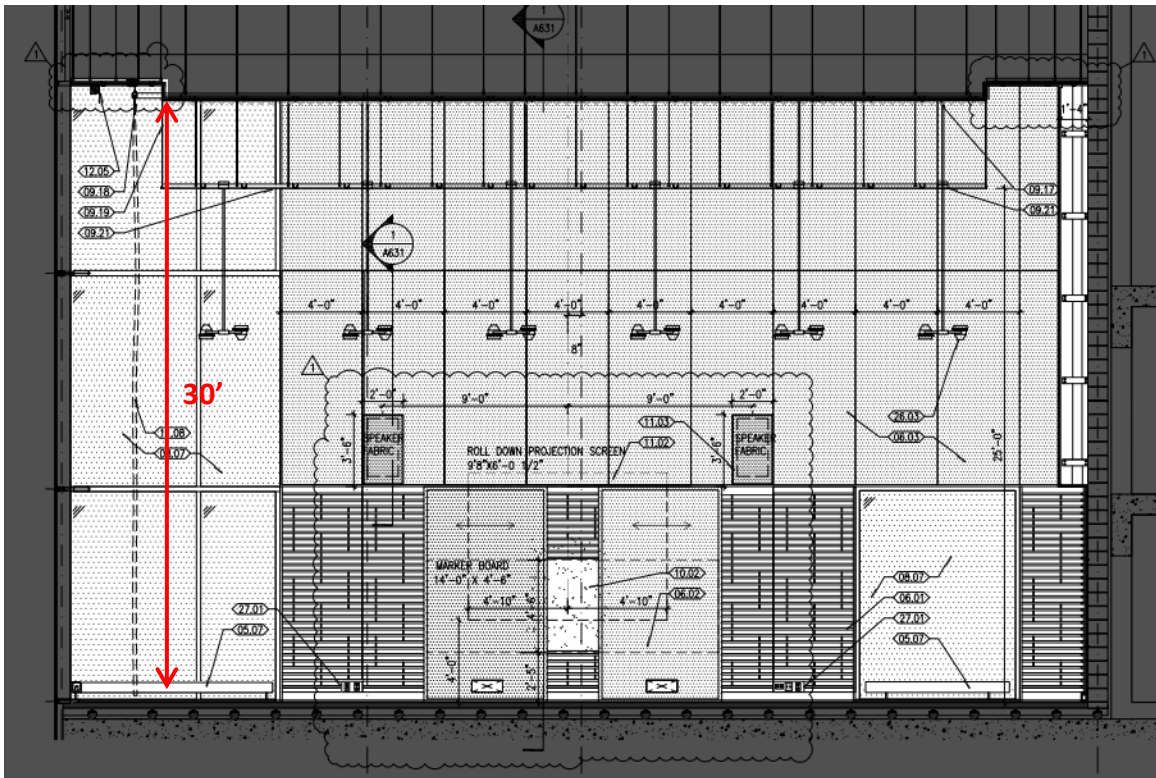


Figure 2.3 – Performance Penthouse East Elevation

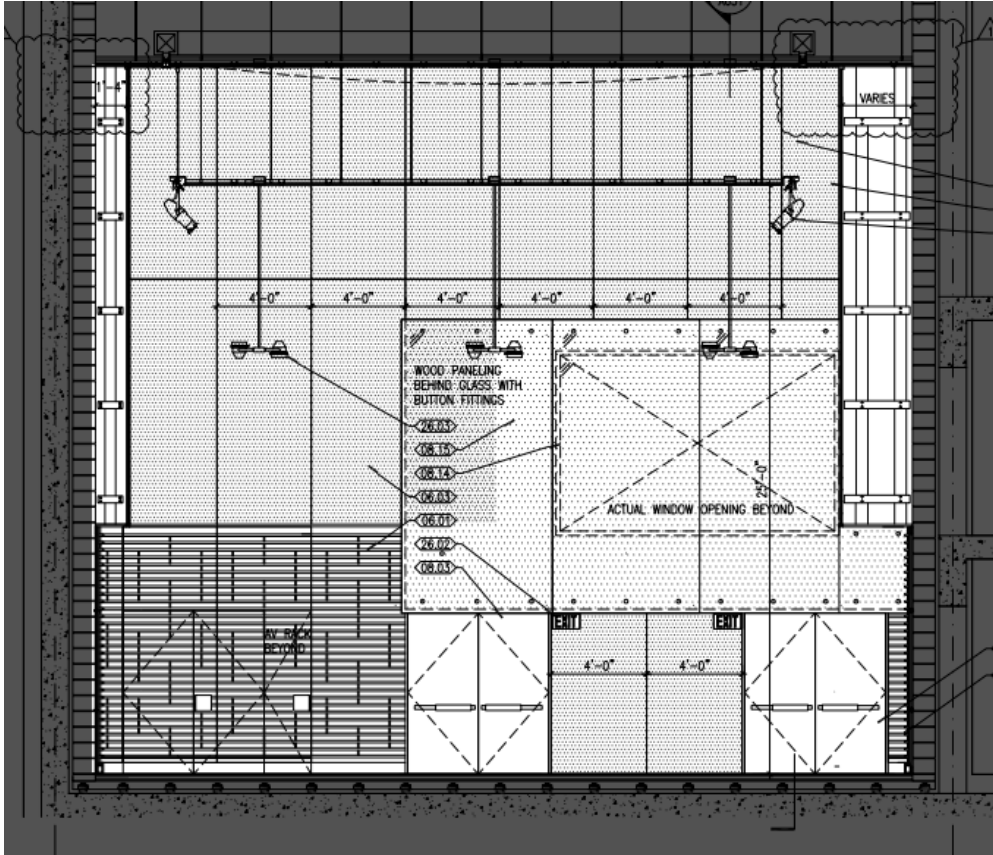


Figure 2.4 – Performance Penthouse South Elevation

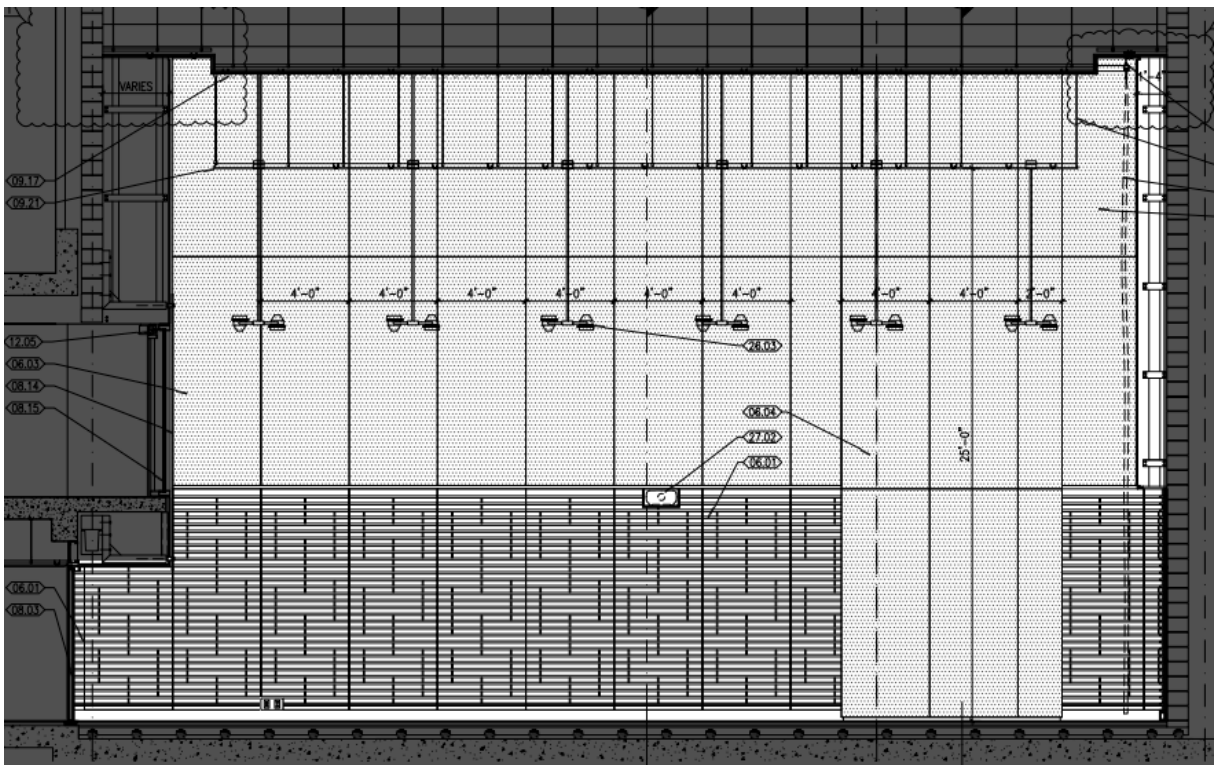


Figure 2.5 – Performance Penthouse West Elevation

Interior Finish

The most interior finish of the Performance Penthouse is wood panel except the ceiling panel. Solid wood batten panel and walnut wood panel are used for the interior of the wall. The ceiling panel is hanged 5' below, and consists of acoustical painted metal panel. The table 2.1 describes materials with its reflectance about the each surface.

Space	Surface	Description	Reflectance (Assumed)
Performance Penthouse	Floor	Strup Wood	0.35
	Wall	Solid Wood Batten Panels with Type 4 - Fabric Wrapped Fibreglass Panels Behind	0.27
		Perforated Wood; Panels, Sliding Panels, Panel Clad wall	0.3
	Ceiling	Acoustical Perforated Painted Metal Panels	0.2

Table 2.1 – Interior Finish Schedule

Furniture

In the Performance Penthouse, the marker board 14' x 4'-6" is installed in the east wall, and used for classroom. Otherwise, the marker board is hid by sliding wood panel for the activities such as dance, music, and performance. Also, there are some single chairs located in the space.



Image 2.1 – Performance Penthouse [www.architectmagazin.com]

Glazing

The glazed aluminum curtain wall system is applied to the space on the North-East wall. It is high performance acoustical glazing, and consists of 1/2" Laminated Lite [1/4" Low-Iron Lite / .060 PVB / 1/4" Low-Iron Lite with Low-E Coating on surface #4], 1/2" Air space, and 3/4" Laminated Lite [3/8" Low-Iron Lite / 0.060 PVB / 3/8" Clear Lite]. The location of the glazed aluminum curtain wall is shown by blue line on the right image.

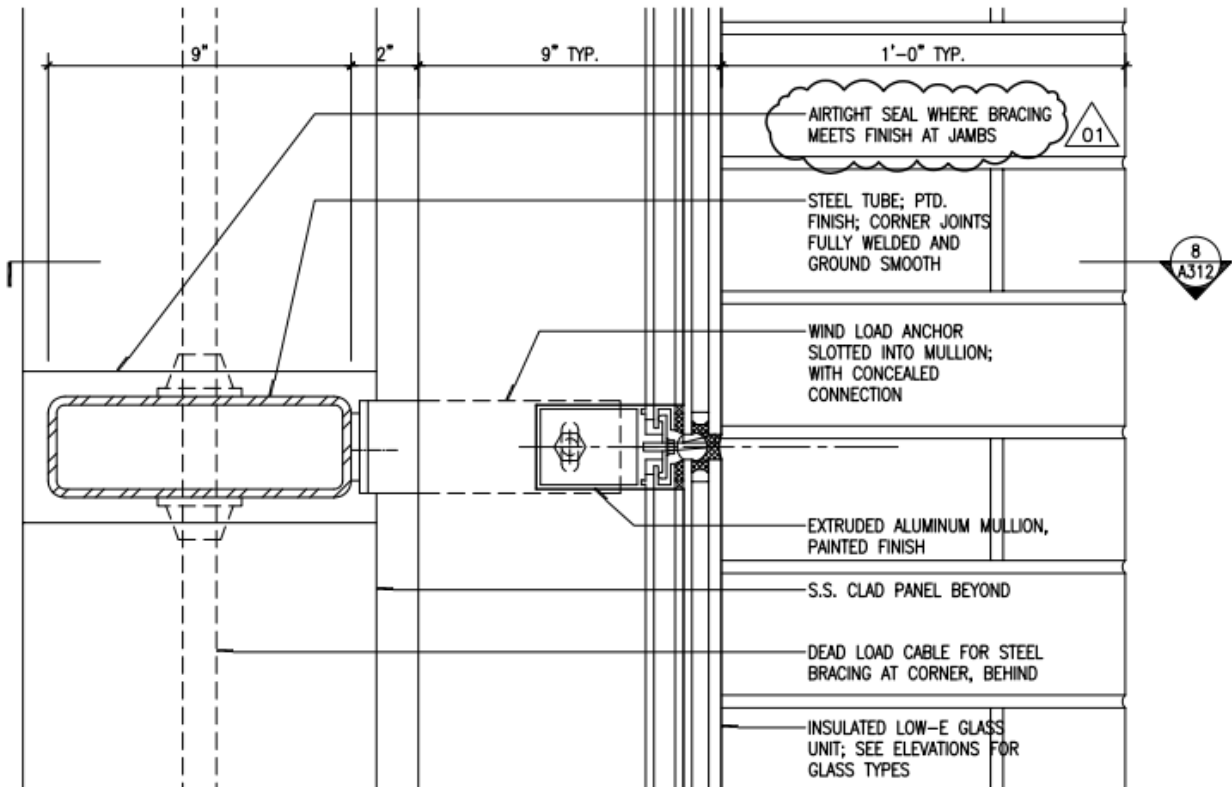
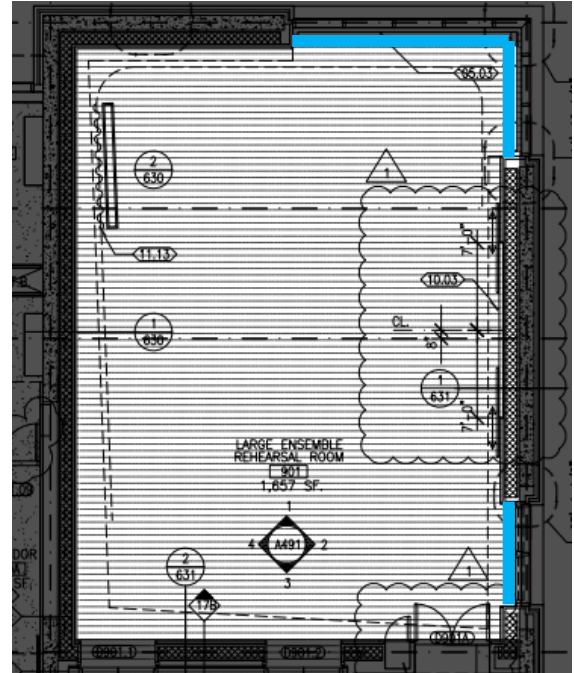


Figure 2.6 – Performance Penthouse Glazing wall Section

2.2 Existing Lighting Conditions

There is only one type fixture in the Performance Penthouse. This custom pendant light fixture is hanged 7' below from the acoustical ceiling panel, and consists of 3 lamps. One lamp is for upward, and provides indirect light to the space. Other two lamps are for downward, and provide direct light to the space. Refer to the table 2.2 for detail information.

SYMBOL	TYPE	DESCRIPTION	MOUNTING	MANUFACTURER	CATALOG NUMBER	LAMPS	WATTS
●	RAH	STEM MOUNTED TUNGSTEN HALOGEN CUSTOM 3-HEAD PENDANT WITH ONE HEAD SERVING AS UPLIGHT AND TWO SERVING AS DOWNLIGHTS	PENDENT	LIGHTING SERVICES INC.	(1) 290-5/(2) 238-5 WL MODIFIED FOR 3 HEADS-S CMPNTS	(1) 45W PAR 38 30 DEGREE, (2) 250W PAR 38 30 DEGREE	545

Table 2.2 – Performance Penthouse Fixture Schedule

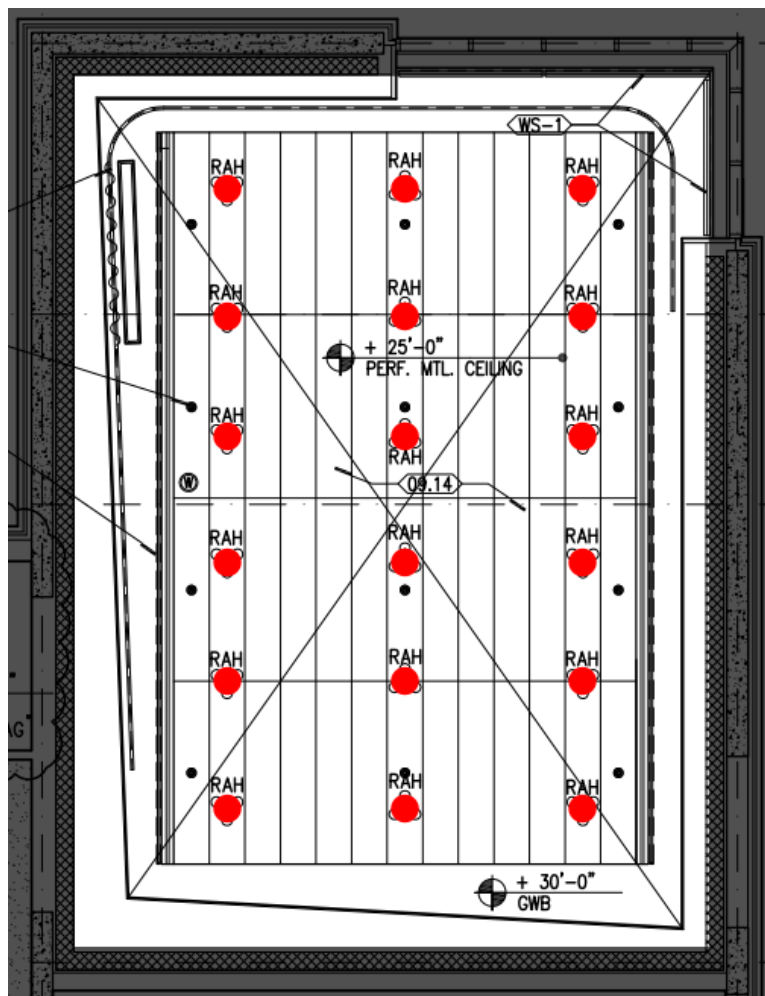


Figure 2.7 – Performance Penthouse Reflected Ceiling Plan

2.3 Design Considerations and Criteria

For various performances in the Performance Penthouse, the daylighting system will be considered to enhance interior environments with providing excellent color rendering. The full-height windows will provide spectacular views along the vista during daytime and nighttime. It helps to connect people to the exterior world, and it would be motivated to the performing people.

In order to provide different work environments to the space, the dimming control system will be considered. It will save the energy by dimming or off the light during daytime. Moreover, the scene control system will be used to serve different tasks during nighttime.

Application Type	E _h (lux)	E _v (lux)	Avg:Min	Note
Dance (Performance)	300	500	1.5:1	E _h , and E _v @5' AFF
Music	300	500	2:1	E _h , and E _v @4' AFF
Music Classroom	300	200	2:1	E _h , and E _v @4' AFF

Table 1.4 – Illuminance Recommendation [IES Handbook 10th Edition (Table 24.2)]

Application Type	Power Density (W/ft ²)
Classroom/Lecture/Training	1.4

Table 1.5 – Energy Allowance [ASHRAE standard 90.1]

2.4 Design Evaluation

In order to evaluate the current lighting solution, a 3D model of Performance Penthouse was created in AutoCAD then imported into AGI32. Since the existing lighting fixture is composited as 3 different lamps with different aiming, one lamp was set up for upward and other two lamps were set up for downward. Each reflectance of the interior finishes was assigned based on Table 2.1. Light Loss Factor is assumed as 0.85 for Luminaire Dirt Depreciation. In this calculation, the black single chair and whiteboard is placed in the space.

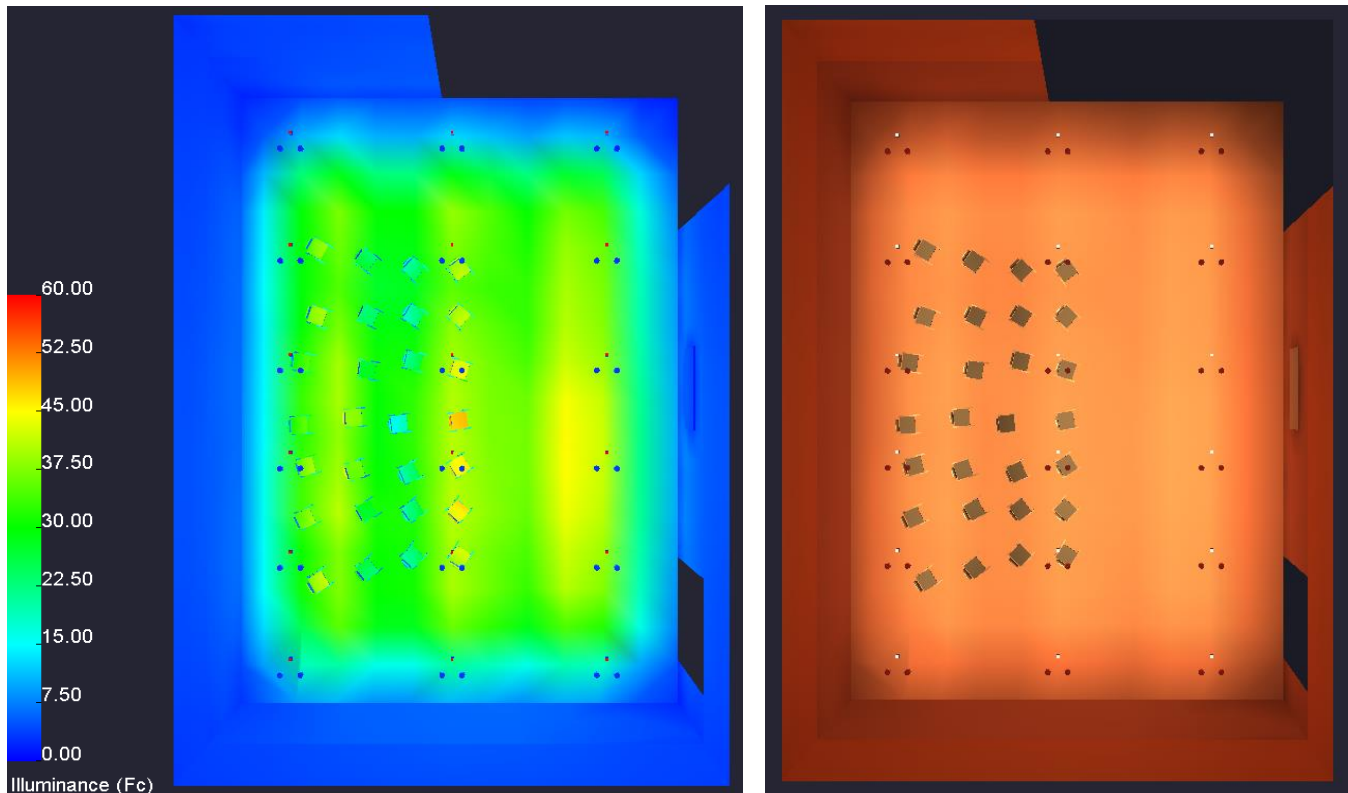


Figure 2.7 – Pseudo color/Rendering Floor plan of Performance Penthouse

The lighting power density (LPD) is 2.4 W/ft^2 . It is higher than 1.4 W/ft^2 which is recommended from ASHREA standard 90.1 because the 250W two lamps were used. As you see the figure 2.7, the current lighting system provides uniformity light distribution on the floor. The average is 23.33 fc ($\approx 251 \text{ lux}$).

This space should be considered to the daylight control system to provide better light quality during daytime with energy saving. Also, different lighting scenes should be provided with lighting control system.

Main Lobby

3.1 Existing Conditions

The main lobby is primary access to the building. The stair near the entrance, allows the people to the tower directly. Also, it is connected to the *GIDWITZ Lobby* where is the daylight feature space with a stairway leading up to terraces both indoor and outdoor audience overflow. The corridor on the lobby is used for gallery, and exhibition. The specific dimensions of the Main Lobby are provided on the figure 3.1 thru 3.5.

- Area: Approx. 7400 SF
- Dimension: Entry Lobby: Approx. W 37' x L 77' x H 10' AFF
Corridor: Approx. W 8' x L 180' x H 10' AFF
GIDWITZ Lobby: Approx. W 58' x L 42' x H 20' - 0 3/4" AFF



Figure 3.1 – Main Lobby/Corridor Floor Plan

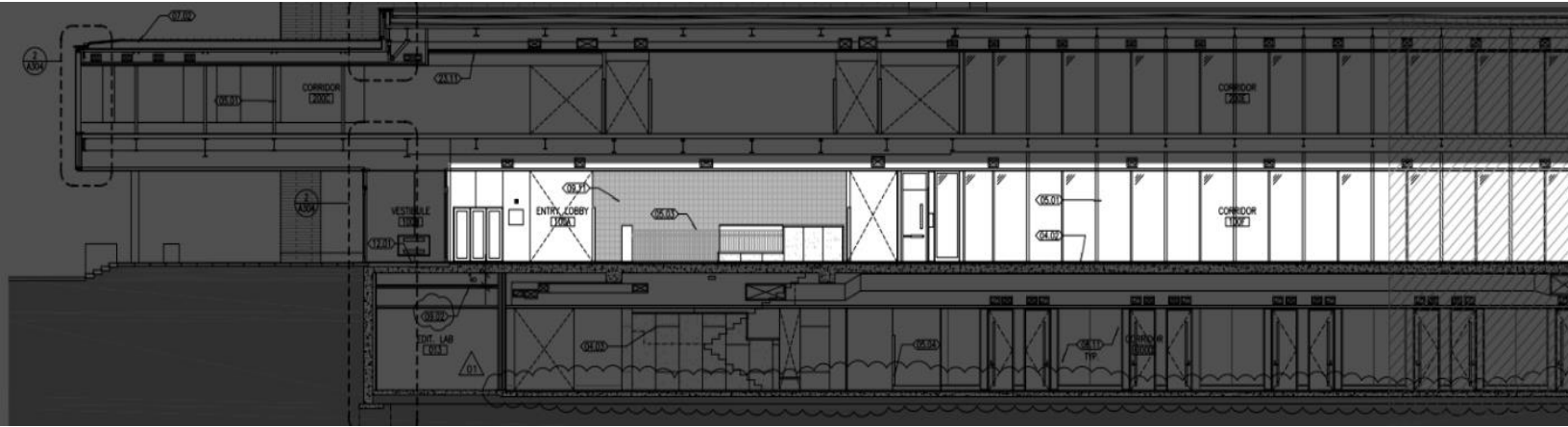


Figure 3.2 – Corridor Section Looking East – North Portion

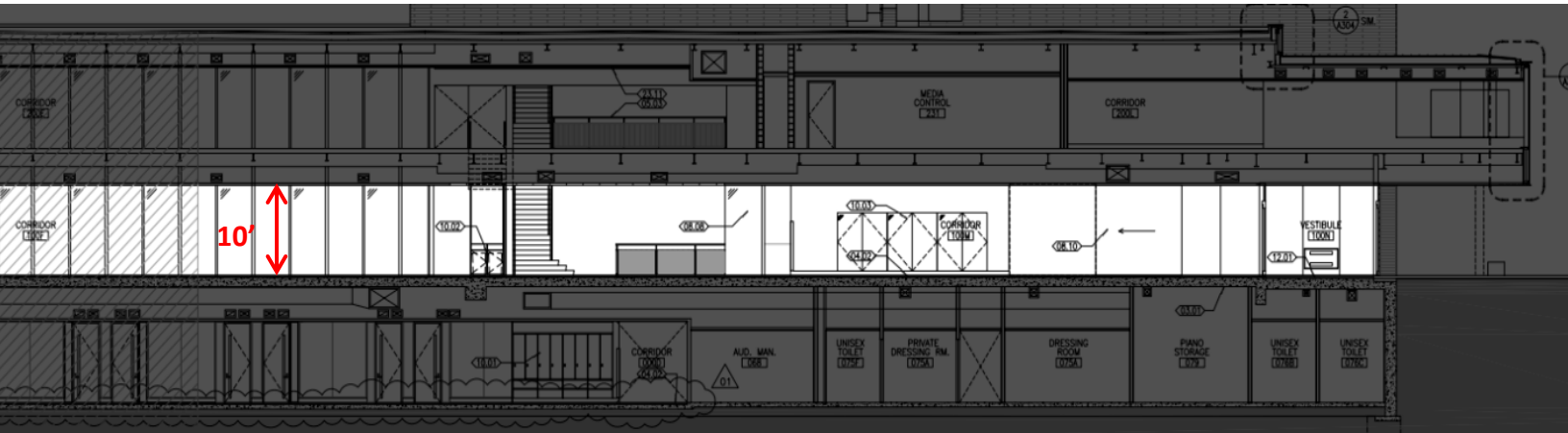


Figure 3.3 – Corridor Section Looking East – South Portion



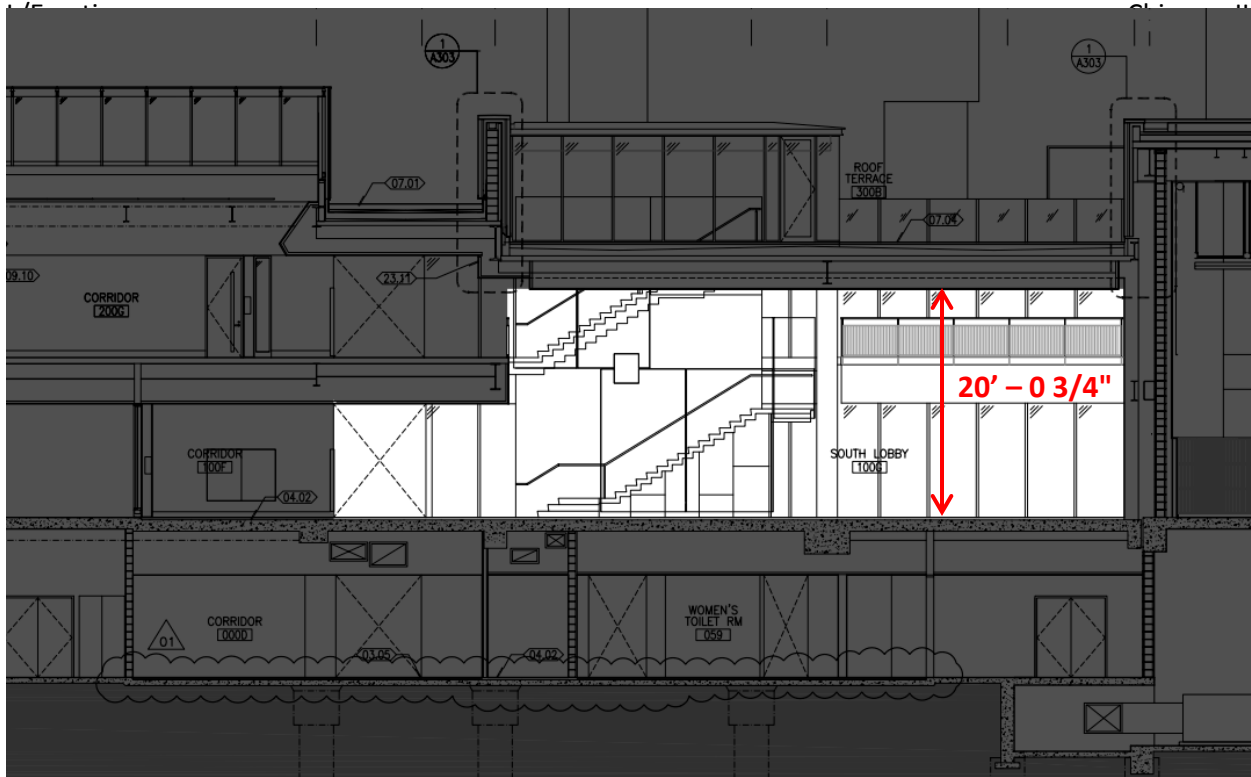


Figure 3.4 – GIDWITZ Lobby Section Looking North

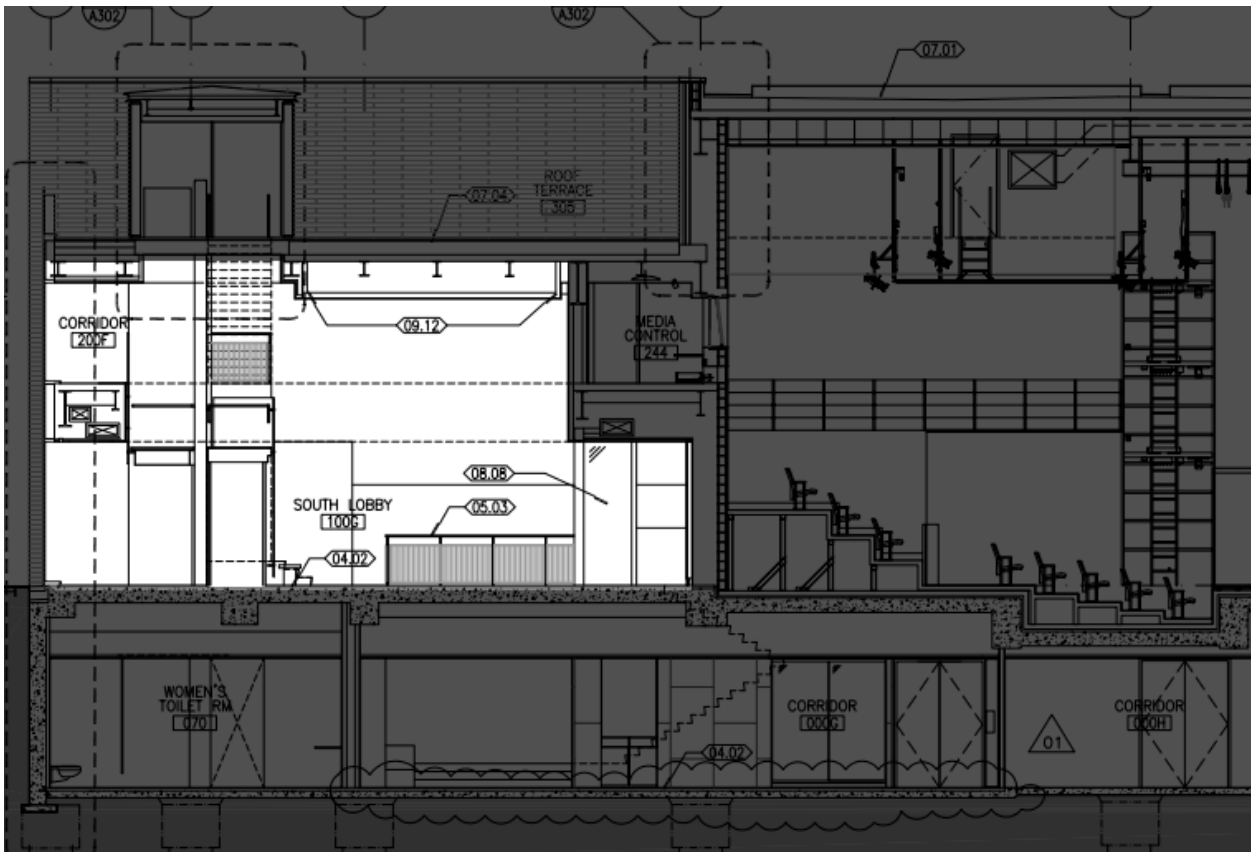


Figure 3.5 – GIDWITZ Lobby Section Looking East

Interior Finish

The entire floor of the main lobby is finished with 18" x 36" Stone tile, and the most wall of the main lobby is finished by white painted gypsum board. Additionally, the ceramic tile and felt wall carpeting are used for entry lobby, and GIDWITZ lobby. The table 3.1 describes the detail interior finishes for the entry lobby, corridor, and GIDWITZ lobby.

Space	Surface	Description	Reflectance (Assumed)
Main Entry	Floor	18" x 36" Stone Type 1 with 6" Metal base	0.47
	Wall	Painted Metal Wall Panel	0.45
		Ceramic Tile Type 3	0.6
		Painted Gypsum Wall Board	0.7
	Ceiling	Painted Type 1 - Gypsum Wall Board	0.75
Corridor	Floor	18" x 36" Stone Type 1 with 6" Metal base	0.47
	Wall	Painted Gypsum Wall Board	0.7
	Ceiling	Painted Type 1 - Gypsum Wall Board	0.75
GIDWITZ Lobby	Floor	18" x 36" Stone Type 1 with 6" Metal base	0.47
	Wall	Felt Wall Carpeting	0.4
		Ceramin Tile Type 3	0.6
		Painted Gypsum Wall Board	0.7
	Ceiling	Painted Type 1 - Gypsum Wall Board	0.75

Table 3.1 – Main Lobby Interior Finish Schedule

Glazing

The glazed aluminum curtain wall system is applied to the entire of the east wall on the corridor and north wall of the GIDWITZ lobby. The window provides clear vision, and consists of 5/16" Low-Iron outer lite, Neutral High-Performance Low-E on surface #2, Air space, and 1/4" Low-Iron inner lite. The location of the glazed curtain wall in the corridor is indicated by blue line in Figure 3.6

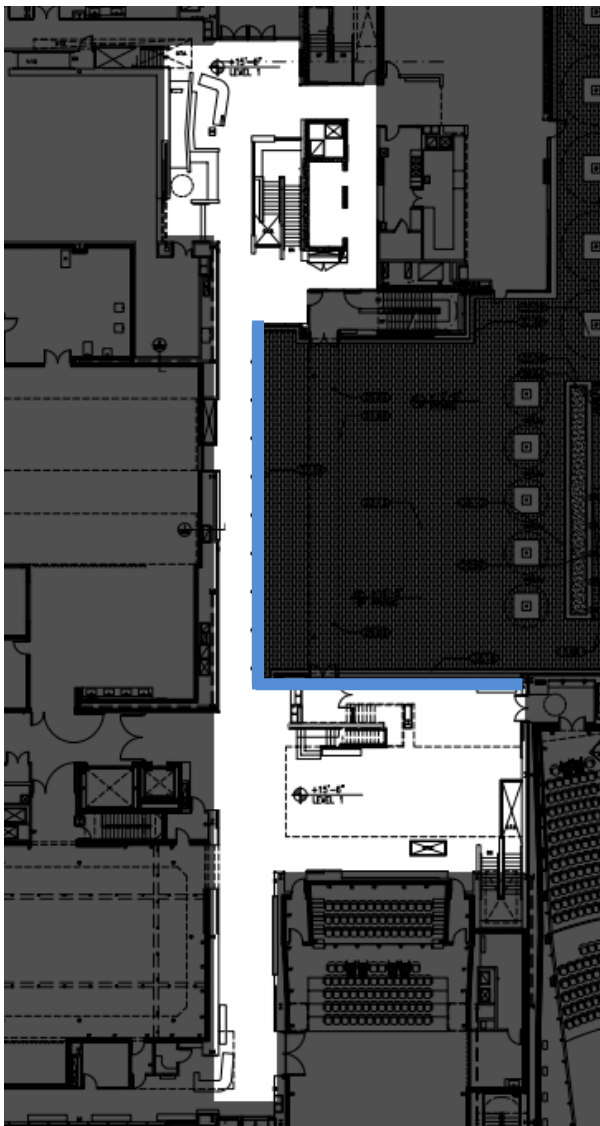


Figure 3.6 – Main Lobby Floor Plan

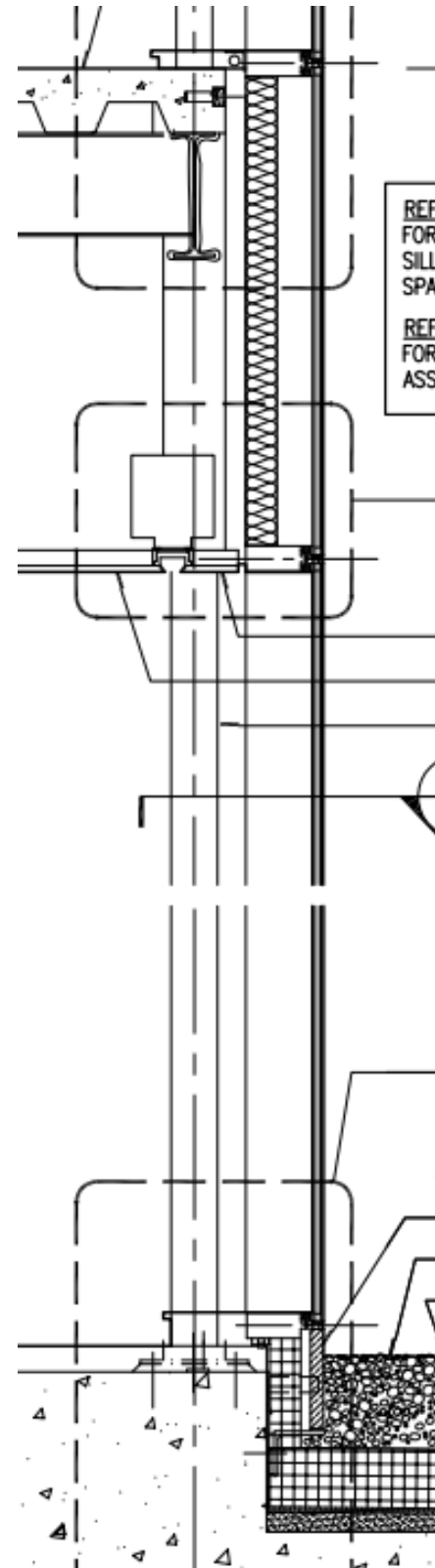


Figure 3.7 – Glazing Curtain Wall Detail in Corridor

3.2 Existing Lighting Conditions

The fully recessed compact fluorescent downlight (Type - RF) is used to provide ambient lights on the lobby and corridor. The fully recessed wall washer (Type – RG) is used to give focus lights on the wall for the gallery and exhibition. To give accent lights on the information desk, the recessed tungsten halogen (Type – RAE 2) is used additionally. The Semi-recessed fixture (Type- RAR) is used on the GIDWITZ lobby with irregular layout.






SYMBOL	TYPE	DESCRIPTION	MOUNTING	MANUFACTURER	CATALOG NUMBER	LAMPS	WATTS
	RF	FULLY RECESSED COMPACT FLUORESCENT 6" APERTURE DOWNLIGHT WITH CLEAR DIFFUSE REFLECTOR	RECESSED	EDISON PRICE LIGHTING	TRPV 18/6 - VOLWF - CHP	18W TRIPLE TUBE 835	22
	RG	FULLY RECESSED COMPACT FLUORESCENT WALL WASHER WITH 6 1/2" APERTURE	RECESSED	EDISON PRICE LIGHTING	WLXT 118/6 - VOLWF - CHP	18W TWIN TUBE 835	22
	RAE-2	RECESSED TUNGSTEN HALOGEN 4" APERTURE ACCENT LIGHT WITH INTEGRAL TRANSFORMER AND STANDARD SEMI-SPECULAR REFLECTOR AND	RECESSED	EDISON PRICE LIGHTING	ANGLUX MR-COL	GE 20WMP16/ HIR/CG10	20
	RAF	SURFACE MOUNTED LED STRIP LIGHT WITH 3000K HIGH OUTPUT VERTICAL LEDs, SYMMETRIC 10 DEGREE BEAM SPREAD ACRYLIC LENS, AND FIELD FIELD ADJUSTABLE MOUNTING CLIPS. FIXTURE TO BE MOUNTED TO WITHIN 3" OF ENDS OF LIGHT BOX.	SURFACE MOUNTED	I.O. LIGHTING	0.03.I.30KHO.10.1 02.1.LENGTH.FEE D.VOLT.DRIVER	WHITE HIGH OUTPUT LEDs	8 (PER LINEAR FOOT)
	RAR	SEMI-RECESSED COMPACT FLUORESCENT DOWNLIGHT WITH GLASS DIFFUSER, OVERLAP, TRIM, AND INTEGRAL ELECTRONIC LUTRON HI-LUME DIMMING BALLAST.	SEMI-RECESSED	LOUIS POULSEN	BAL-CP-1/18W/CF GX24q-2-VOLT WHT-LUTRON HI-LUME	18W CF QUAD-4P 835	22

Table 3.2 – Main Lobby Fixture Schedule

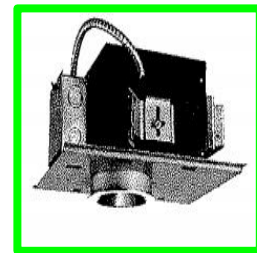
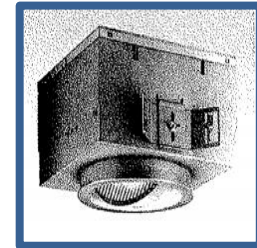
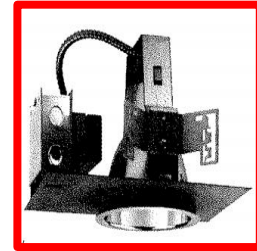
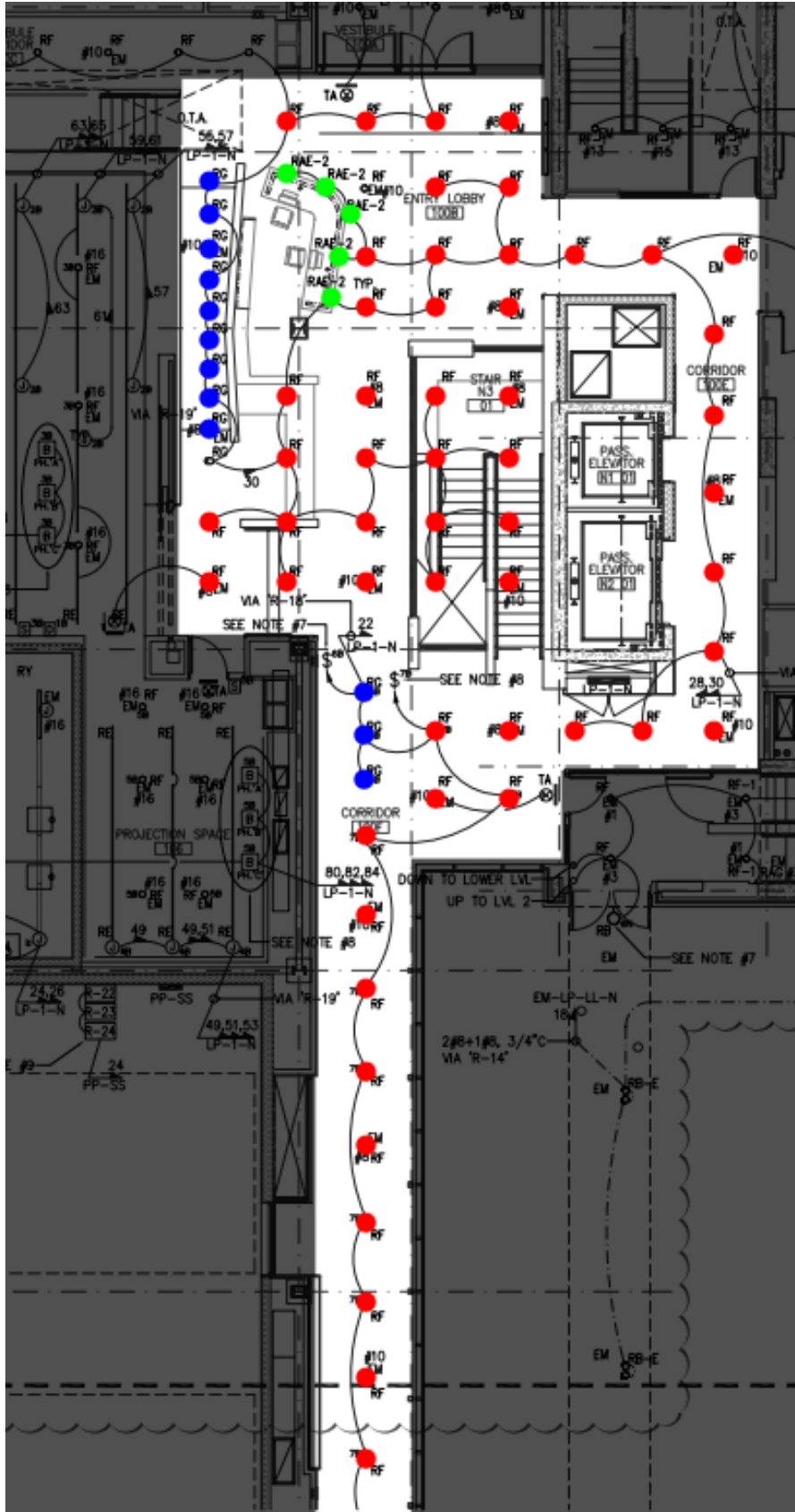


Figure 3.8 – Main Lobby Reflected Ceiling Plan - North Portion

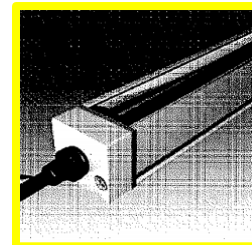
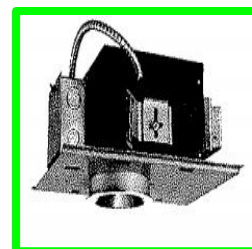
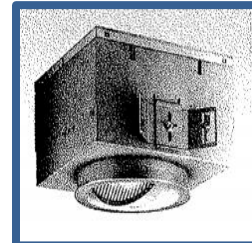
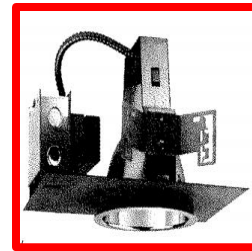
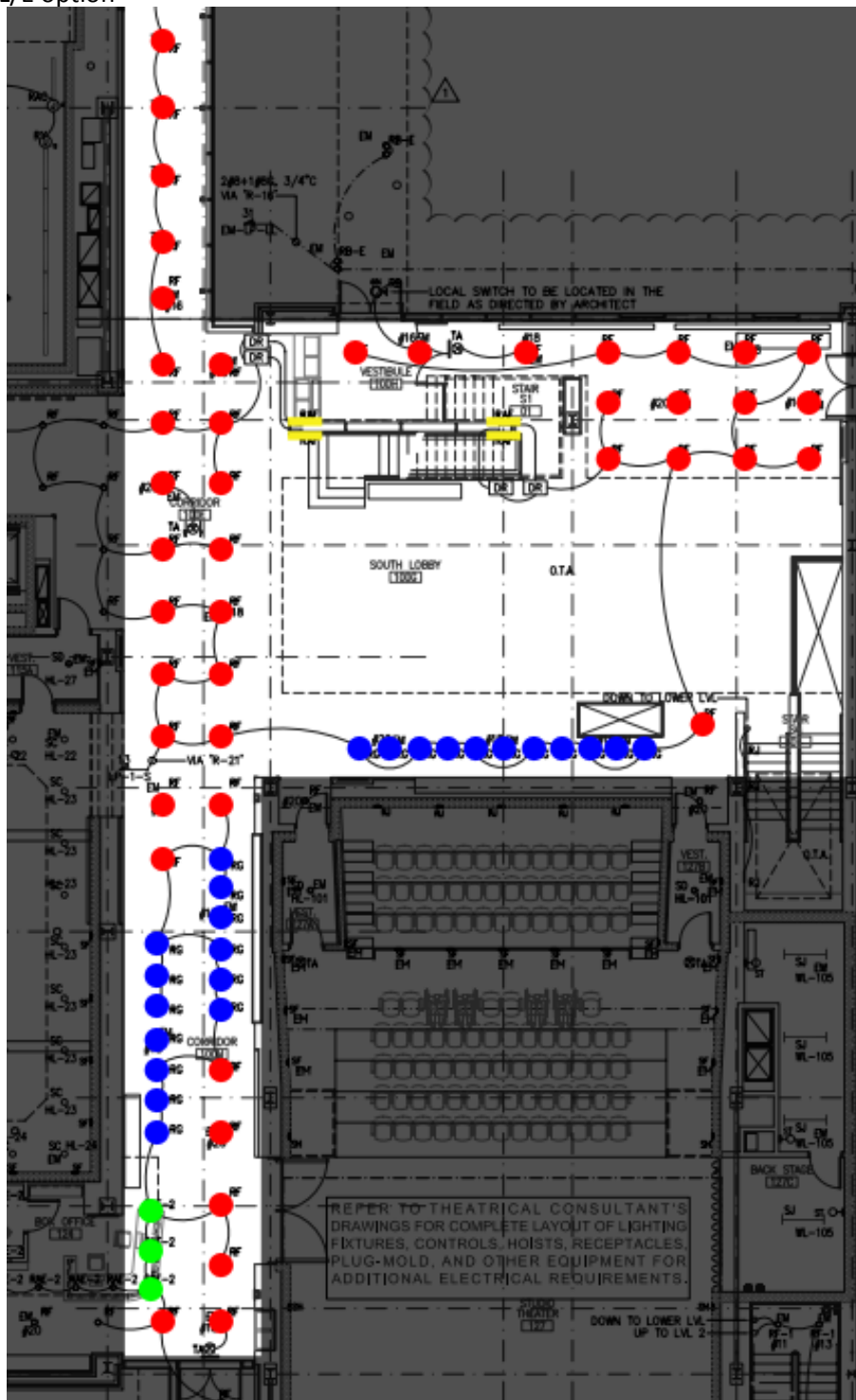


Figure 3.9 – Main Lobby Reflected Ceiling Plan - South Portion

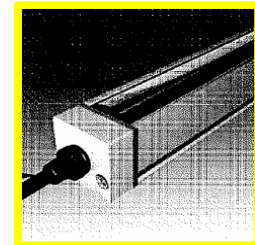
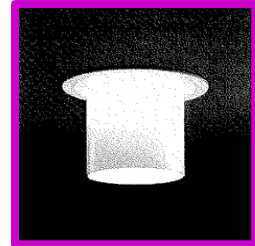
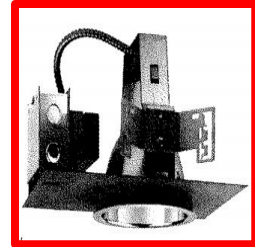
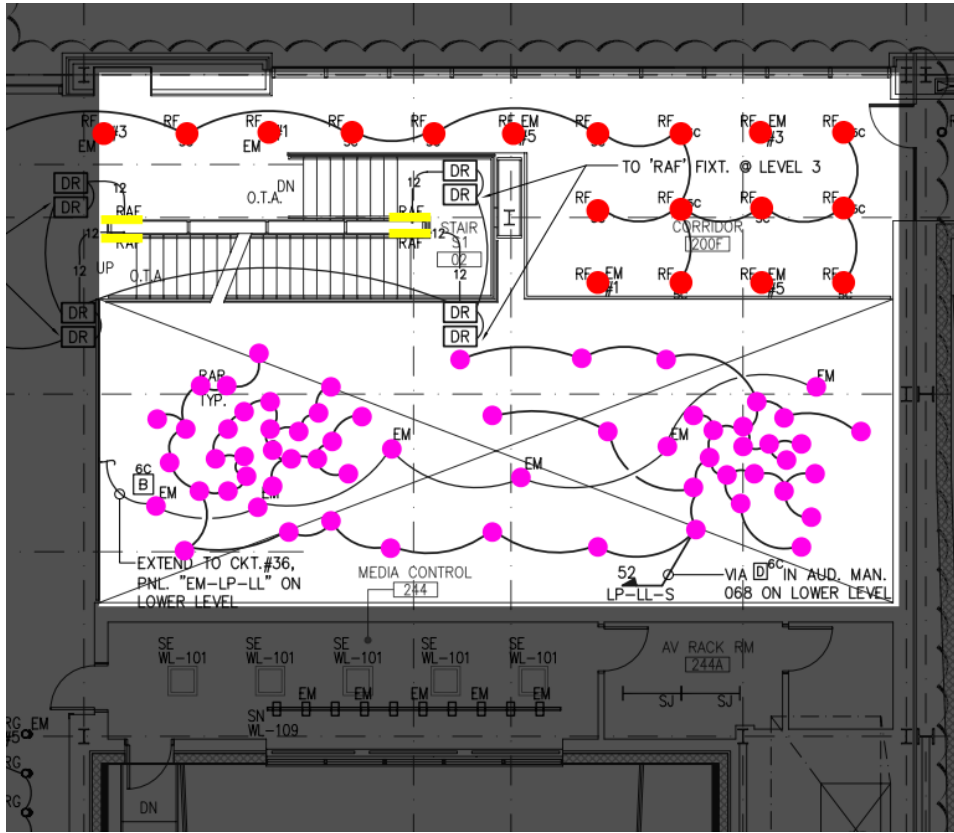


Figure 3.10 – GIDWITZ Lobby Reflected Ceiling Plan

3.3 Design Considerations and Criteria

As the entry lobby is a main entrance to the building, and delivers people to the stair that access to the tower and lower level, the transition will be important with proper lights amount. The illuminance criteria and accents are an important aspect of making comfortable and safe transitions. The lamp types and color qualities should be matched for purpose of visual consistency. The daylight feature will be considered to make a space more enjoyable for the people.

Application Type	E _h (lux)	E _v (lux)	Avg:Min	Note
Lobby-Day	100	30	4:1	E _h @floor, E _v @5' AFF
Lobby-Night	50	20	4:1	E _h @floor, E _v @5' AFF
Adjacency Passageways	Avg ≥ 0.2 x E _h of adjacent space	Avg ≥ 0.2 x E _v of adjacent space	3:1	E _h @floor, E _v @5' AFF
Independent Passageways	50	30	2:1	E _h @floor, E _v @5' AFF

Table 1.4 – Illuminance Recommendation [IES Handbook 10th Edition (Table 22.2)]

Application Type	Power Density (W/ft ²)
Lobby	1.3
Corridor/Transition	0.5

Table 1.5 – Energy Allowance [ASHRAE standard 90.1]

3.4 Design Evaluation

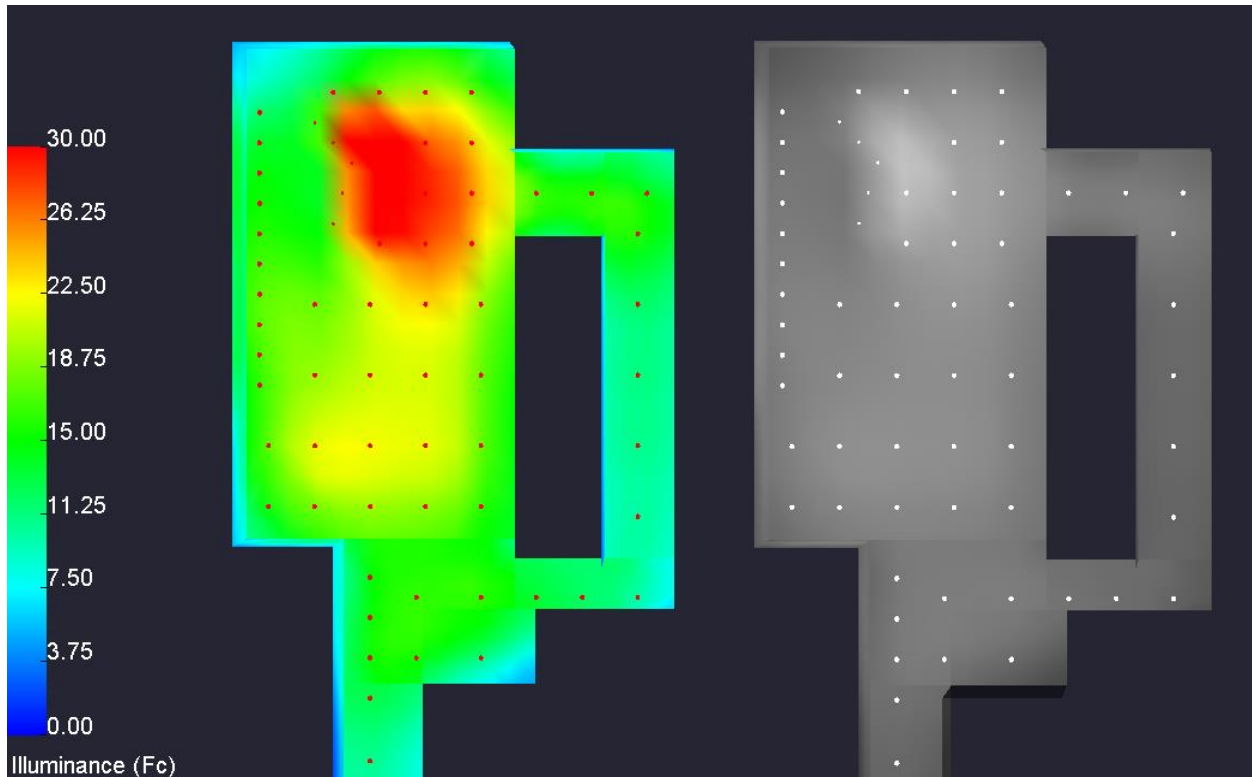


Figure 3.11 – Pseudo color/Rendering Floor plan of Main Lobby – North portion

The average illuminance of the entry lobby is 19.85fc (≈ 213 lux). It is higher than the recommendation value of the IES Handbook 10th Edition. The location of the information desk receives highest illuminances as needed enough light for the task.

Overall, the current lighting solution of the lobby is very simple. One type fixture is used to provide general light on the entire space, and the space where needed focus/accent light was designed with different types fixtures. The lighting power density (LPD) of the entry lobby is 0.585 W/ft^2 , which is less than the ASHRAE standard of 1.3 W/ft^2 .

Since the entry lobby is the main access to the building and tower for the people, the simple design should be applied to attract the people. Also, the flexibility should be considered for the exhibition and gallery in the corridor.

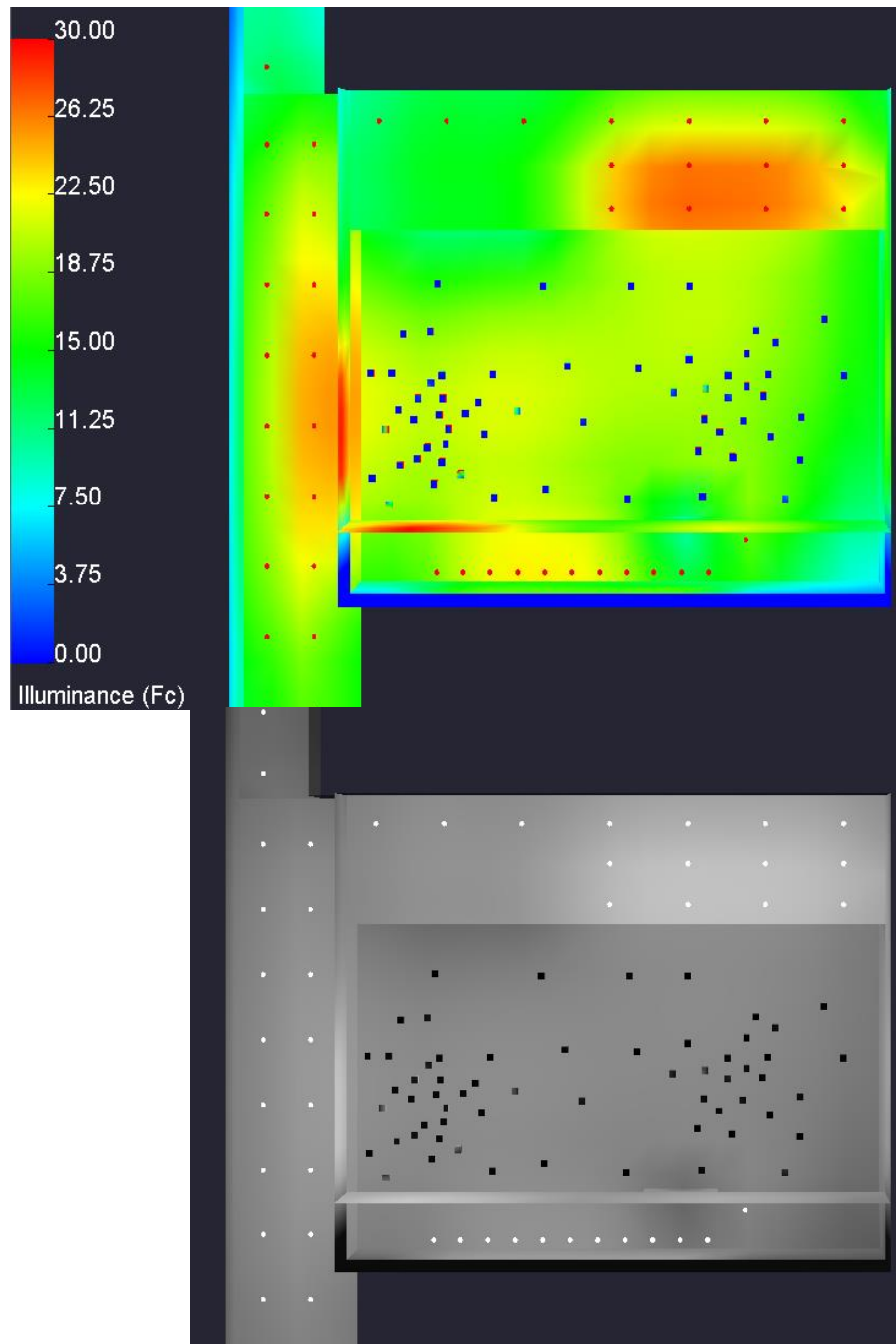


Figure 3.12 – Pseudo color/Rendering Floor plan of Main Lobby – South portion

The irregular lighting layout is applied to the ceiling of GIDWITZ Lobby, and it provides 19.22 fc (≈ 177 lux). As you see the figure 3.11 above, most fixtures are located near the South, because the entire north wall is consists of glazed curtain wall system and provides enough daylights into the space during daytime. During nighttime, the recesses compact fluorescent downlight provides ambient lights on the stair, and the second floor corridor. Since the space has potential for the controlled daylight integration, a daylight sensor should be used to control lighting system for the energy saving. Also, the aesthetic lighting design should be considered in GIDWITZ Lobby.

Courtyard

4.1 Existing Conditions

The Courtyard is placed at outdoor, and surrounded by Logan Center building and Midway Studio building. It allows people to access to tower and performance hall directly. This space is provided as a rest area and café for the students; and used for class, exhibition, and outdoor performance sometimes.

- Area: Approx. 10,700 SF
- Dimension: Approx. W 60' (widest) x L 144' (Longest)

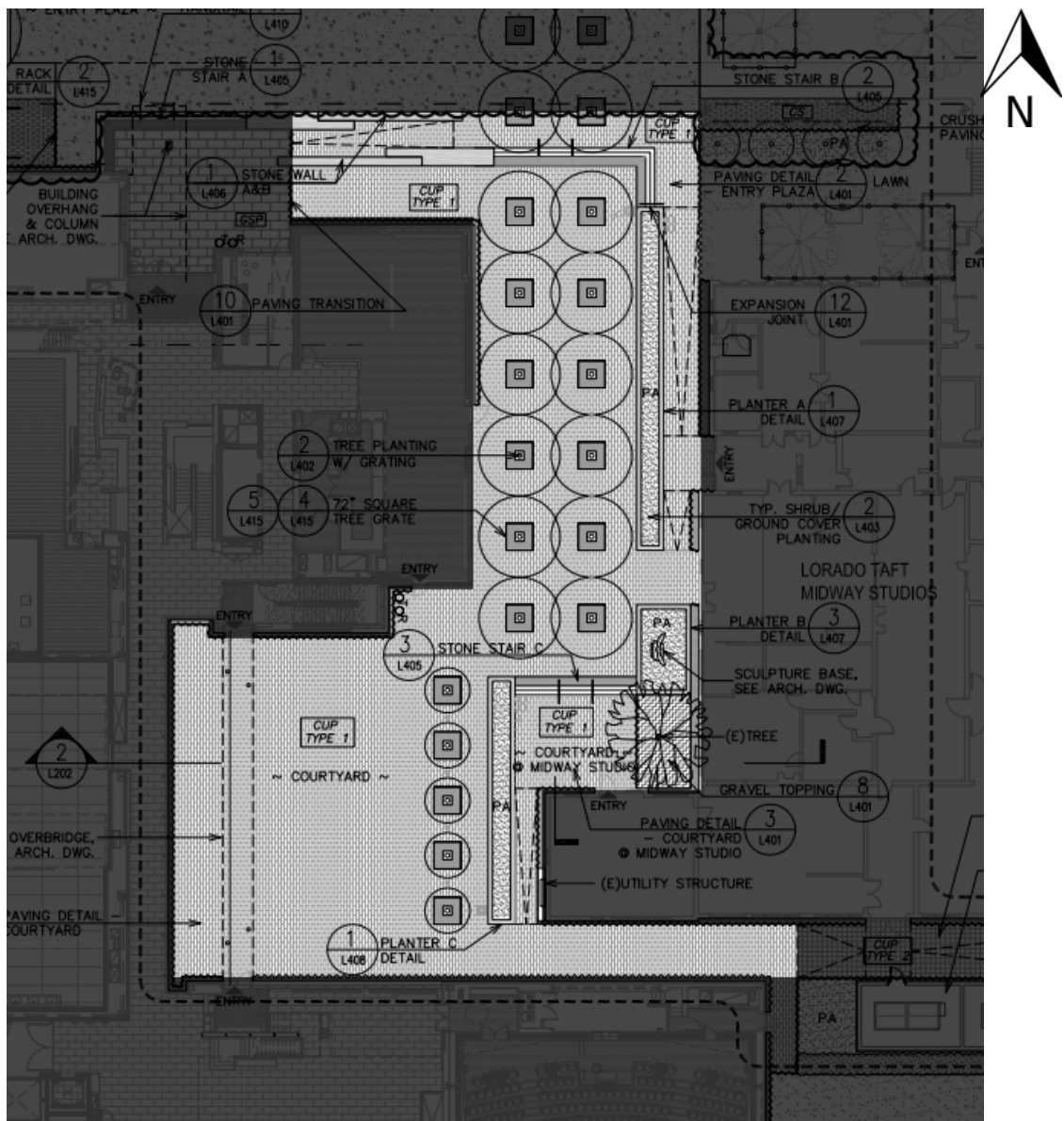


Figure 4.1 – Courtyard Floor Plan

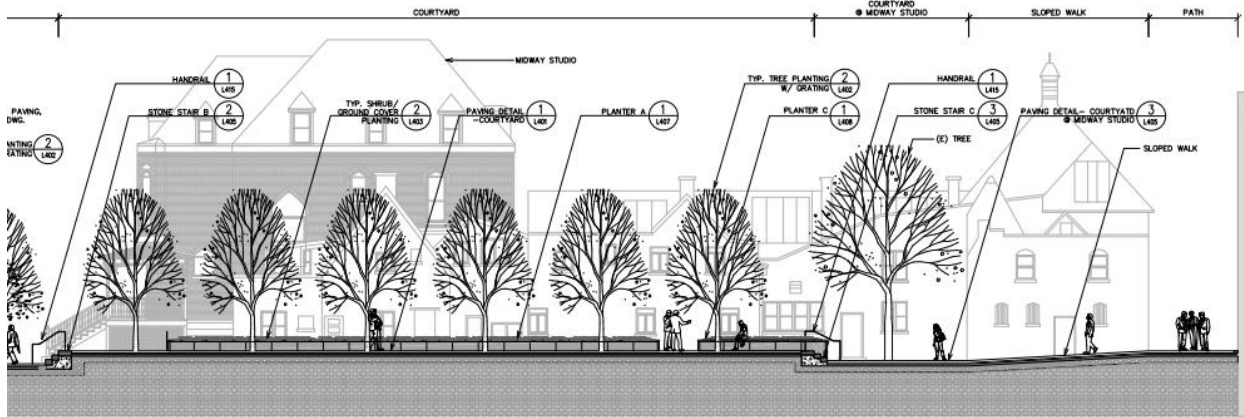


Figure 4.2 – Courtyard Section View – Looking East

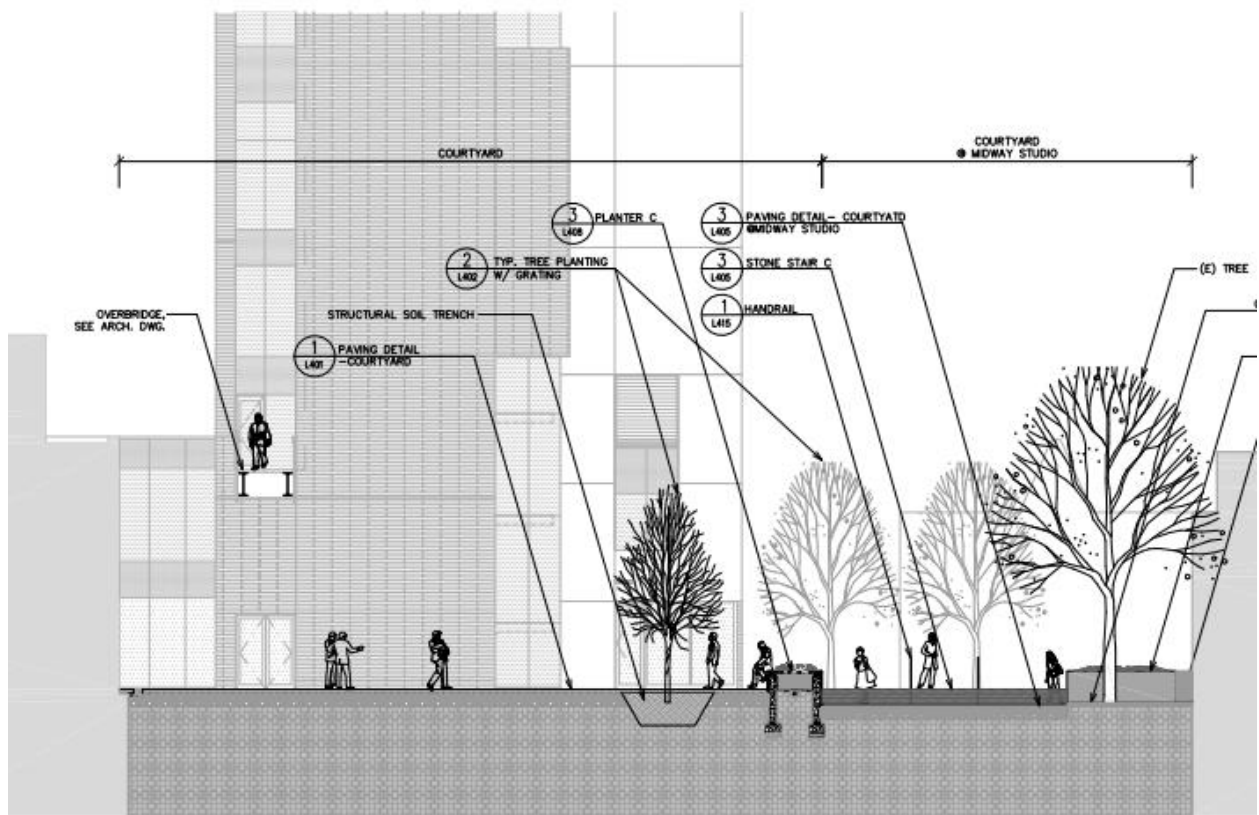


Figure 4.3 – Courtyard Section View – Looking North

Interior Finish

As the courtyard is located at the outside, the floor is the only interior finish, and consists of concrete unit paver type 1.

Space	Surface	Description	Reflectance (Assumed)
Courtyard	Floor	Concrete Unit Paver Type 1	0.5

Table 4.1 – Courtyard Interior Finish Schedule

Tree & Bridge

The autumn blaze maple tree and fastigiated ginkgo tree are planted on the courtyard for the landscape architecture. The 72" x 72" stainless steel is placed at the bottom of the tree. As you see the image 4.1 below, there is a bridge on the west side of the building to connect between tower and GIDWITZ lobby.

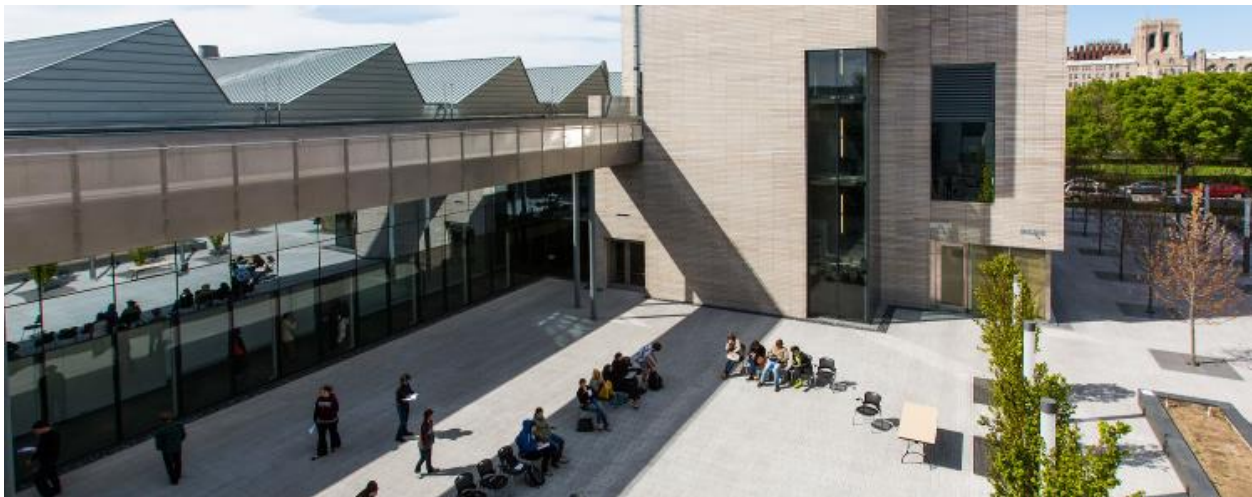


Image 4.1 – Courtyard [arts.uchicago.edu]

4.2 Existing Lighting Conditions

The 13' bollard light fixture is located between the trees. Its distribution is a Type IV. In addition, the recessed compact fluorescent fixture is applied to the side of the stone wall, and provides light on the step of the stair.

SYMBOL	TYPE	DESCRIPTION	MOUNTING	MANUFACTURER	CATALOG NUMBER	LAMPS	WATTS
●	RAV	METAL HALIDE EXTERIOR POLE WITH TYPE IV DISTRIBUTION, ACRYLIC LENS WITH HORIZONTAL TRANSITION INTO EXTRUDED ALUMINUM HOUSING, AND LITEGRAL ELECTRONIC BALLAST	POLE MOUNTED	HESSAMERICA	SE4000G-70-M-VOLT-13RB-GG	PHILIPS CDM70/T6/830	95
■	RJ	RECESSED COMPACT FLUORESCENT GLOWING STEP LIGHT FIXTURE WITH DIE-CAST ALUMINUM FACEPLATE, CLEAR TEMPERED GLASS WITH TRANSLUCENT WHITE CERAMIC COATING, AND INTEGRAL ELECTRONIC COLD WEATHER BALLAST.	RECESSED	COLE LIGHTING	2225P-(FINISH)-COLD WEATHER BALLAST	18W TWIN TUBE 4PIN 835	22

Table 4.2 – Courtyard Fixture Schedule

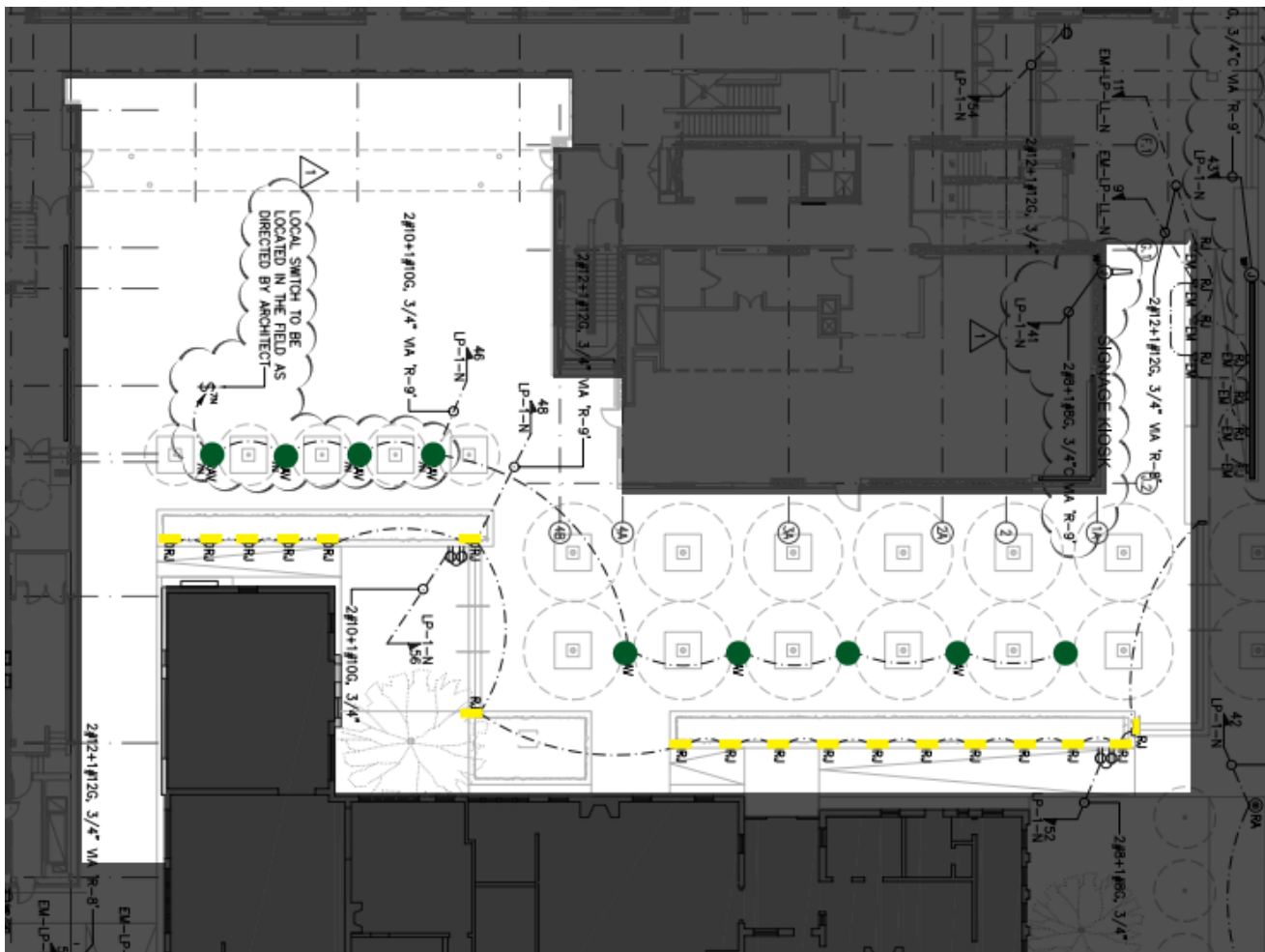


Figure 4.4 – Courtyard Lighting Plan

4.3 Design Considerations and Criteria

For the outdoor lighting zone, the courtyard should be defined as LZ3 which is moderate ambient lighting since the courtyard could be used for the outdoor performance, and banquets. Accent light should be important to provide visual relief and visual attraction for wayfinding. The entry lighting should transition between the indoor and outdoor lighting condition. The safety also should be considered, but it is not necessarily uniform or continuous. The Illumination ration in table 4.4 is the ratio average illuminance on focal point typically of vertical orientation to average illuminance on primary task plane typically of horizontal orientation.

Application Type	Attraction	Role	Illumination Ratio	Note
Performance Area	Moderate	Feature	~5:1 focal-point-to-task	Eh@pavement, and Ev @5' AFG
Perimeter (on wall plane or trees)	Soft	Visual Edge	~2:1 focal-point-to-task	Eh@pavement, and Ev @5' AFG

Table 4.3 – Illuminance Recommendation [IES Handbook 10th Edition (Table 15.2)]

Application Type	Power Density (W/ft ²)
Walkway 10ft widw or greater	0.2

Table 4.4 – Energy Allowance [ASHRAE standard 90.1]

4.4 Design Evaluation

The 13' bollard light fixture provides light with type-IV distribution with leading people to the building inside and outside. In addition, the wall recessed light fixture is used on the stair for the safety reason. With this existing condition, the aesthetic design will be developed in this space to provide flexible lighting to enhance the performance environments during nighttime. Due to the location of the courtyard (surrounded by Logan Center and Midway studio building), the design criteria also should be considered to avoid light trespass to the building through the window.

References

DiLaura DL, Houser KW, Mistrick RG, Steff GR. Illuminating Engineering Society The Lighting Handbook
10th Edition.

ASHRAE Standard 90.1, 2007 – Energy Standard for Building Except Low-Rise Residential Buildings.