



# Jeddah Art Complex

By

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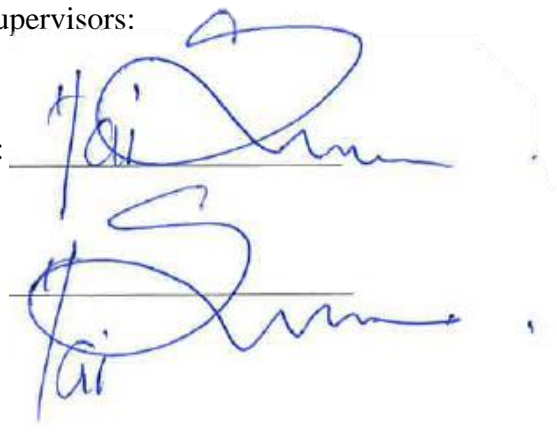
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This project marks a significant milestone, and I eagerly look forward to applying the knowledge and skills I've gained to future opportunities.

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## CHAPTER 1: PROJECT OVERVIEW

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## **1.1 INTRODUCTION:**

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### **1.1.1 PROJECT STATEMENT**

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The predicament that Jeddah faces as a society is the lack of appreciation of the artistic scene & its counterparts. The local artists are overlooked and find it difficult to display their artwork in proper settings with the embodiment of having a place to collaborate with other artists and partake in their passions. Another concern that hinders the artistic flow is the absence of educational spaces dedicated to the arts, even with a tremendous artistic presence in the city of Jeddah..

### **1.1.2 PROJECT VISION**

---

The project vision aims to build a building that facilitates the artistic needs of Jeddah, to have a place where artists can flourish within a creative space and interact with one another. To enhance the community's knowledge, whether being a frequent visitor to see the artwork or being a student that has been taught by teachers and display the work to show the public.

The project conception proposes to build a building that facilitates the artistic needs of Jeddah, to have a community where artists can flourish within a creative space and interact with one another. To enhance society's knowledge, whether being a frequent visitor to see the artwork or being a student that has been taught by instructors and display the work to show the public.

The project falls under the two branches of the 2030 Vision of Saudi Arabia, them being the Quality of Life Program and the Human Capital Development Program. In the aspect of the QOL program, the project aids with the vision of creating and establishing many cultural centers and enhancement of the arts. Regarding the Human Capital Development program where it was considered with the education sector and increasing the quality.

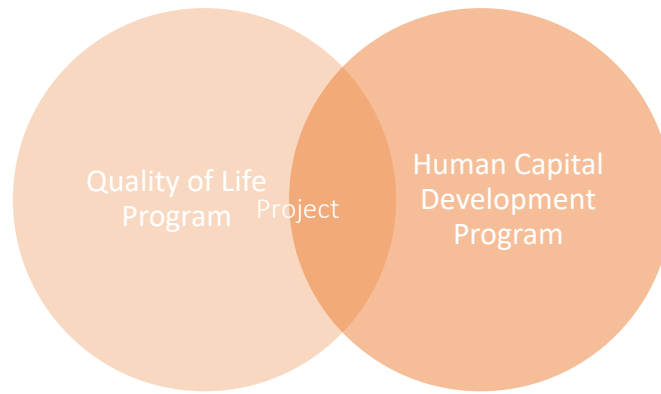


FIGURE 1-0-1 VENN DIAGRAM PORTRAYING THE RELATIONSHIP

---

### 1.1.3 PROJECT OBJECTIVES

---

The objectives that the project aims to achieve is six significant components in providing multiple determinants for the community from different perspectives. A focus on the educational part of the program to enhance the community talents in the field of the arts and becoming a landmark art academy in Jeddah. Not only attending for the local community but also help provide spaces for local artists to flourish in creative spaces and increase the economy by providing a prestige lifestyle. When setting such spaces, it will help develop a diverse society of students, artists, and the public.

---

### 1.1.4 PROJECT DESCRIPTION

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The project is to provide to the needs of the artist and the people all in one place. For the artists, an area provisioned for the creative needs with the addition of an educational program for students. The program consists of two artistic departments ranging from the visual arts to the performing arts and arranging the appropriate studios to cover the needs of each discipline. The main hall will dedicate to the hard work of the students at the end of the academic year. For the public, they will experience the main exhibitions and also be able to participate in enhancing their abilities in workshops managed by experts. There will also be an economic factor to the project by providing art equipment to the public in one domain.

---

### 1.1.5 PROJECT PHILOSOPHY

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To acquaint the arts to the public to a place where all the arts fall under one roof. That they can experience the arts through different mediums whether they would prefer to study a particular division or experience the product of the artist. This institution could help stimulate the public into associating with art and become well-informed about the topic.

## 1.2 HISTORICAL BACKGROUND

---

### 1.2.1 INTRODUCTION

---

This section of the chapter focuses on the historical flow of the art education in Saudi Arabia. An analysis of the history of art curriculums and cross-examine them with the problems found in the Saudi Arabian art education and how that will influence the design configuration of the project.

### 1.2.2 ART EDUCATION IN SAUDI ARABIA

---

The art education started to connect to the general education around sixty years ago, where the art schools focused on duplicating works that were given, and it did not help with the child's creative development (Bajouda). Though this approach to the arts completely changed when art education specialties graduated from Art Education Institute in Riyadh that was established in 1964. In addition to this progress, The Saudi Arabian Society for Culture and Arts was founded in 1972, which sponsored Saudi artists and to help develop their skills and display their art (Felamban, 2007).

### 1.2.3 THE SIX CURRICULUMS OF THE ARTS

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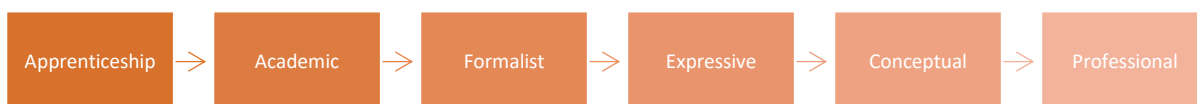


FIGURE 1-0-2 CHRONOLOGICAL ORDER OF CURRICULUM PROGRESS

There are six art curriculums found that helped the progression of the arts through history. Each curriculum has its unique qualities and focused on specific aspects of the study of the arts and

concerned with dedicating different skills and approaches to the students. All six curriculums are found in current art schools in one combination or another instead of one school concentrating on one route (Houghton, 2016).

### Apprenticeship

- Before the establishment of educational institutes for artists (during the European Middle Ages)
- A master with knowledge about a particular craft would host several apprentices
- In the end, the students would showcase what they learned and then would begin a solo practice

### Academic

- The first academy started in Italy during the 16th century then spread through Europe
- Focused on elevating students' talent and learning the basics of arts
- Not only about practical skills but the value and the status of artists

### Formalist

- Modernism movement
- Bauhaus school of art and design was unique in dealing with the arts, as a language and students must be taught it and learn how to use it
- Paved the way for the expressive curriculum

### Expressive

- The curriculum helps children express themselves through the Children's Art Movement
- Not only to express themselves but also find their style

### Conceptual

- The students do not engage in producing artwork but theories, ideas, and concepts
- The artwork does not stand alone without producing a concept
- Began the institutional critique of the art world & power structure

### Professional

- Tied to the belief that education should be instrumental & aligned to students earning a living and contributing to the country's economy
- How to build a competent and successful career

FIGURE 1-0-3 BREAKDOWN OF THE ART CURRICULUM

## 1.3 THEORETICAL APPROACH:

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### 1.3.1 INTRODUCTION

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This section of the chapter focuses on the overview of the trends and theories of designing within a desert climate or a project with similar surroundings and finding out how to deal with the surroundings through passive techniques.

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### 1.3.2 ALYA CLUBHOUSE

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FIGURE 1-0-4 ALYA CLUBHOUSE EXTERIOR

There are two determinants that the project achieved with acknowledging the surrounding environment. The first factor is how they dealt with the form, that being it was fostered from the traditional Bedouin stretch shelters, and also the colour choice helps the building blend into the surrounding mountains. The second factor is implementing conventional architectural elements that are the use of the mashrabiya that helps filter the light into the building (Crook, 2019).

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### 1.3.3 SOUTH AFRICA REMOTE LODGING

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FIGURE 1-0-5 REMOTE LODGING EXTERIOR

The project is designed in a mountainous area where the weather is changeable and the main concern when designing the home was that it would correspond to the climatic changes throughout the year. The project has many passive techniques to deal with the changeable weather, one being that there are sliding timber shutters in the main living hall positioned according to the sun to let the light in. Another technique is implementing a sun trap for the winter months to collect the warmth into the brick walls. The final technique is having scattered displays of the windows to regulate the temperature within the building (Thorpe, 2016).

## CHAPTER 2: CASE STUDY ANALYSIS

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## **2.1 CASE STUDIES**

---

### **2.1.1 INTRODUCTION:**

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The selection of the case studies was based on the requirements for the project program and how it would unite the three different components of artists, students, and public. Analyzing different case studies that focus on the needs of each user will help in creating a program that does not neglect any of the components.

### **2.1.2 DESIGN CONSIDERATIONS**

---

After the conduction of the case study analysis, a theme, standard, and a criterion for the following art academies and studies began to form. The criteria began to form an ideology then moving on the design consideration and some completing the transition into becoming a standard depending on the art form studied within the facility or department.

## 2.2 CASE STUDY 1: KENNEDY CENTER FOR THEATRE AND THE STUDIO ARTS

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FIGURE 2-0-1 EXTERIOR SHOT OF KENNEY CENTER FOR THEATRE AND THE STUDIO ARTS

---

### 2.2.1 DESCRIPTION:

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The new Kennedy Center for Theater and the Studio Arts is sited opposite the as of late finished Ruth and Elmer Wellin Museum of Art, additionally structured by Machado and Silvetti Associates. Together with the McKim Mead and White structured Molly Root House, home of the craftsmanship history office, these two new structures and the new grass and lake, planned by Reed Hildebrand as a major aspect of the MSA group, structure a profoundly unmistakable new expressions quad at Hamilton College. The Theater and Studio Arts building is situated along the southern edge of its open site and intended to shape and casing perspectives on an inside garden, which inclines tenderly down to the lake at the site's middle. The undertaking's tallest component, the Romano Flexible Theater, is put at top of the slope to make a visual association between the new building and the notable Hamilton College grounds on the opposite side of College Hill Road. Porosity is a basic segment of the comprehensive structure. The task siting and configuration cautiously thinks about passerby and vehicular access from existing grounds ways and streets and development through and around the new building meshes it into the grounds texture (Aguilar, 2015).

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## 2.2.2 CONTEXT AND SITE CONDITIONS:

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The orientation and configuration of the center take into consideration all the surroundings from changes in the streets, new buildings, and landscape. One characteristic is evident to the shape of the center was the development in the street curvature, preserving the former design was out of the question a new one was made to correspond to the surroundings and respecting the concept of the project.



FIGURE 2-0-2 PERVIOUS DESIGN RECOMMENDATION



FIGURE 2-0-3 FINAL DESIGN IMPLEMENTATION

Another acknowledgement to the site was straightening the entrance axis of the project to the adjacent building. The points of entry are vital components to the project; not only are they arranged with surrounding buildings but also to the pedestrian pathway and vehicles. These deliberations all have to do with the sense of continuity and harmony between the university buildings.



FIGURE 2-4 PERVIOUS ENTRY POINTS



FIGURE 2-5 MODIFIED ENTRY POINTS

The final consideration to the site was the relationship between the building and the existing landscape. Not only is the project aligned with nearby buildings, but the curved shape came from the existing lake to create a sense of unity.

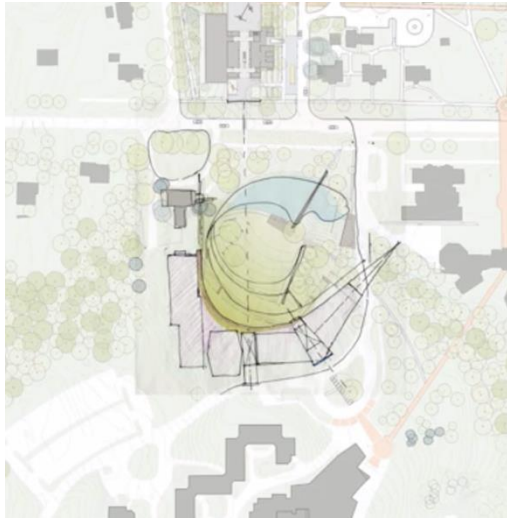


FIGURE 2-6 SKETCH DEVELOPMENT



FIGURE 0-7 FINAL RESULT

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### 2.2.3 FLOOR PLANS ANALYSIS:

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The distribution of the spaces is in three segments: a lower part which is a docking loading. The plan of the ground floor is in three primary departments: the STARS, workshops, and theatre counterparts. The workshops that rely on heavy machinery are located on the ground floor to evade structural loads on the upper floor. The entry points to the building bring in the pedestrians to the exhibition hall and a bridge leading them to the lake — the first floor devotes to senior student studios and theatre students with their assigned faculty. The theatre stages are on the first floor with structural portal frames to allow wide spans to run and support a generous number of people, without columns in the center of the stage.



FIGURE 2-8 GROUND FLOOR ZONING



FIGURE 2-9 GROUND FLOOR PLAN



FIGURE 2-10 FIRST FLOOR ZONING



FIGURE 2-11 FIRST FLOOR PLAN

## 2.2.4 SECTIONS

The cross sections show the connections between the function on a vertical scale. The vital components shown in these sections are the structure elements adapted with in the project to uphold the theater.



FIGURE 2-12 SECTION



FIGURE 2-13 THEATER SECTION

## 2.2.5 ELEVATIONS

The design of the façade elevation was concerned with integrating with the environment surrounding the project. The façade blends in through the color choice and the woven shapes craved into the concrete façade.

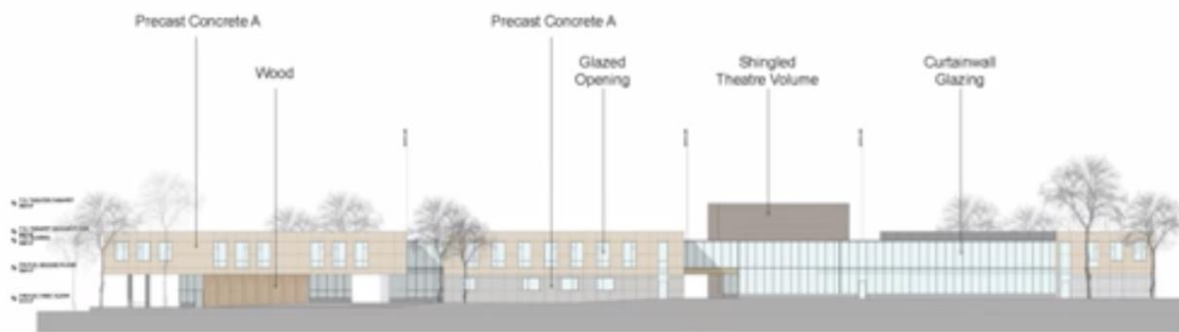


FIGURE 2-14 KENNEDY CENTER ELEVATION

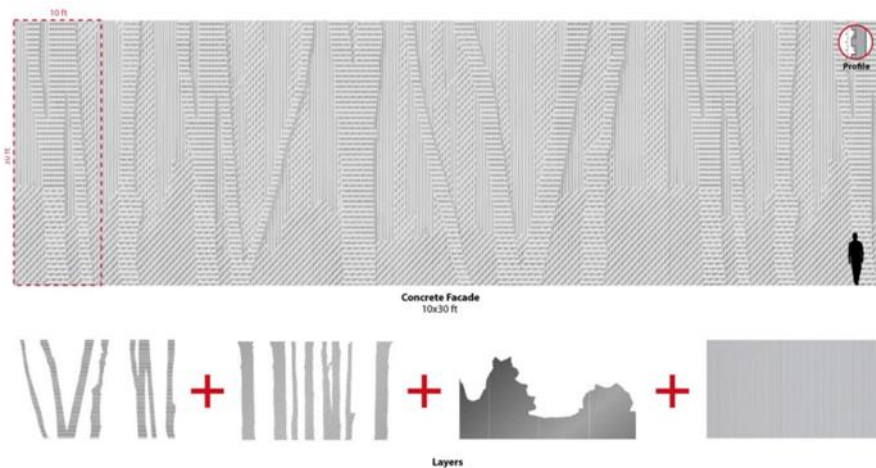


FIGURE 2-15 FACADE DETAILS



FIGURE 2-16 3D SHOT OF THE KENNEDY CENTER

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## 2.2.6 PROGRAM

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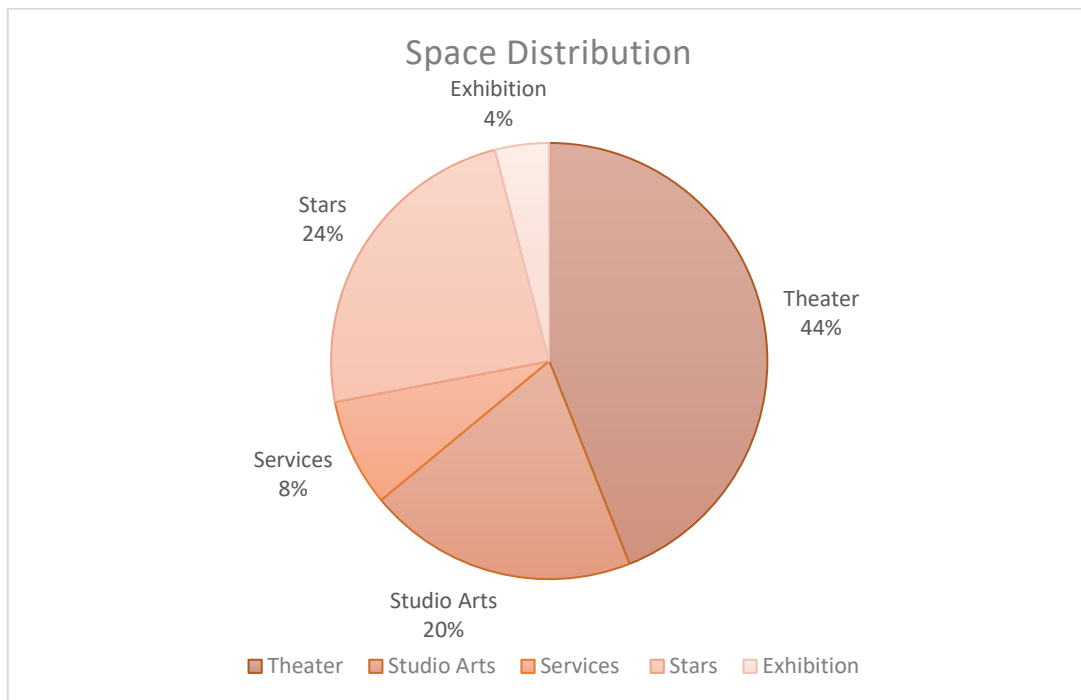


FIGURE 2-17 PROGRAM PERCENTAGE

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## 2.2.7 CONCLUSION ANALYSIS

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The first comprehensive skill is to understand the site, surroundings, and the impact the project will have, rather than focusing on the project alone without the overall view. The second consideration is that the needs of the users consist of accessibility, acoustics, and privacy, according to the level of the students in the study. Another consideration is the environmental aspect, whether it is an in an aesthetical approach to blending in the surroundings or a technological approach using concrete and brick material to block all the cold winds to the building.

## 2.3 CASE STUDY 2: THE NEW GLENSTONE MUSEUM:

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FIGURE 2-18 EXTERIOR OF THE NEW GLENSTONE MUSEUM

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### 2.3.1 DESCRIPTION:

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The Glenstone museum of modern and contemporary art found in Maryland, USA offers users a seamless integration full of experiences ranging from works of collections, architecture, and landscape. The different components of the museum were designed by different companies depending on the jurisdiction of expertise. The part relating to the collections, known as The Gallery, designed by Charles Gwathmey of Gwathmey Siegel & Associates Architects, the opening to the public was in 2006. The architecture component was composed by the architecture group Thomas Phifer and Partners. Concerning the natural setting of the museum, it was handled by Adam Greenspan and Peter Walker of PWP Landscape Architecture, where the environment integrates notable works of outdoor sculptures within the meadows and unspoiled woodlands (Castro, 2018).

Thomas Phifer derived the notion from what the user will observe when arriving at the museum, which is the illusion of “village of buildings.” Although the pavilions vary in size and proportion and are all part of one cast-in-place concrete and steel structure with a circulation route around the center water court. The visual experience comes from the concept of yin and yang throughout the project



highlighted by the simple color palette of the materials and details, casting daylight and shadows all over (McGuigan, 2018).

---

### 2.3.2 CONTEXT AND SITE CONDITIONS:

---

The key objective that Thomas Phifer was “embedding nature into the experience”. The pavilions blend into the surroundings in form of a visual experience to the user and also respecting the landscape without intruding. The architects worked on reshaping the terrain and existing landscape with the addition to planting trees to create an ecology that has always been there. Many considerations were taken to not interfere with the overall concept of the museum, and one of them was placing the parking lot a 10-minute walk from the museum.

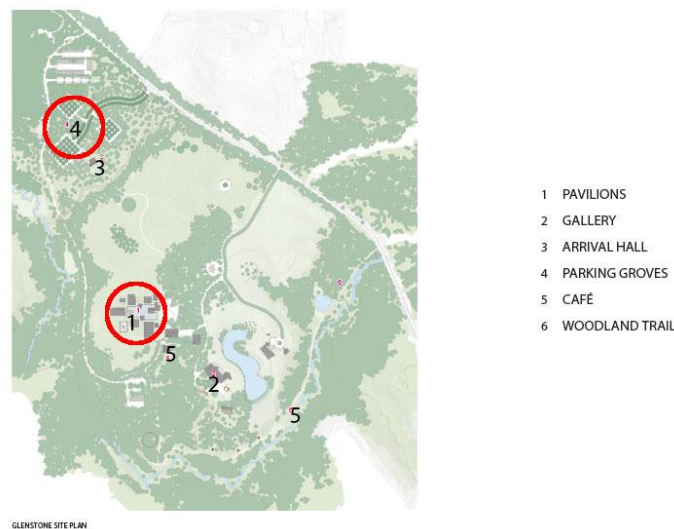


FIGURE 2-19 SITE PLAN

The landscape architects delivered a strategic plan that expanded the user experience to the landscape from 100 to 230 acres of woodlands, meadows, and streams accessed to the public. The scenery plays a fundamental focal point to the project proving the concept of integrating and taking advantage of the natural surroundings that can be an element of the user experience. The integration is shown with how the architects dealt with designing the cluster forms to blend in the surrounding.

### 2.3.3 FLOOR PLAN ANALYSIS

The division of the spaces on the entry-level is dedicated to the three different users: visitors, loading the arts, and staff. This floor plan is devoted only to the entry to the building then descend to their respective spaces. After arriving at their zones, the visitors will begin their aesthetic journey through the galleries that enclose and open water court full of landscaping. The management area is for the staff to go through their administering work and near the galleries for easy supervision (Castro, 2018).



FIGURE 2-20 ENTRY LEVEL FLOOR PLAN



FIGURE 2-21 LEVEL FLOOR PLAN

---

### 2.3.4 SECTIONS

---

The section shows the various multiple levels and how they are distributed to respect the privacy and the usage of each zone. The gallery areas are held up with steel truss beams to support the long spans needed for the room and the heights of the art pieces being displayed within them. The rest of the exterior building material is made from masonry and cast concrete to shape the cubical shape of the buildings (McGuigan, 2018).

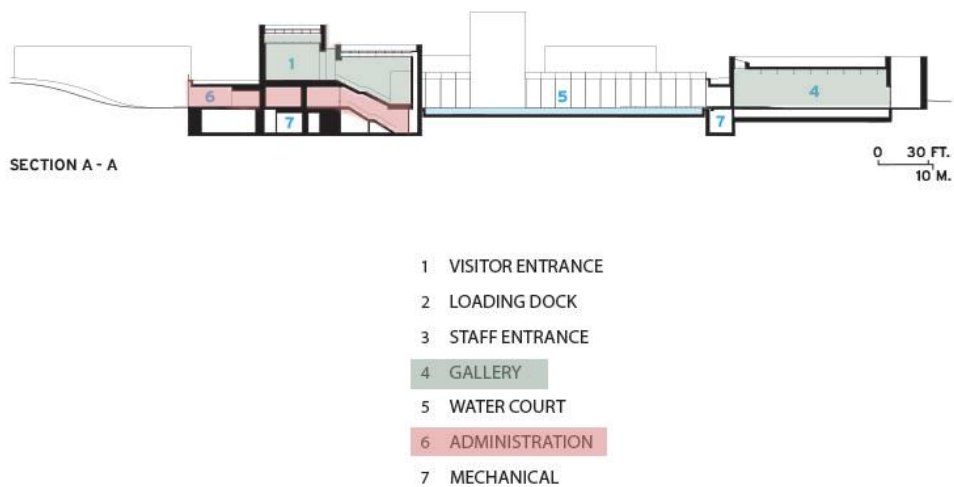


FIGURE 2-22 SECTION OF GLENSTONE MUSEUM

---

### 2.3.5 ELEVATIONS

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The façade of the pavilions blends into the surroundings that it is placed in. This comes from the concept of the whole project that it does not want to stand out and obscure the visitors view of the



FIGURE 2-23 ELEVATION OF GLENSTONE MUSEUM

landscaping of the project and the natural environment. This all came with choosing the correct material and the color, so it could camouflage with nature.

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### 2.3.6 PROGRAM

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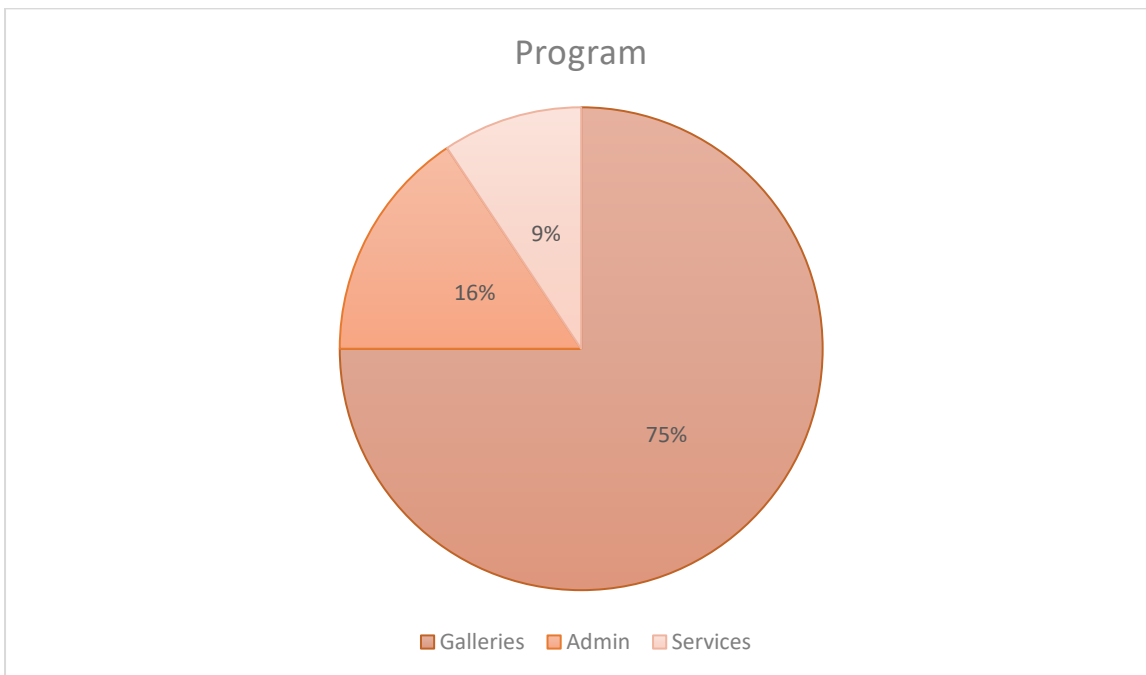


FIGURE 2-24 PROGRAM CHART

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### 2.3.7 CONCLUSION ANALYSIS

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The first aspect is the users' experience and journey from the start of entering the building, which starts from the parking a lot and then a ten-minute walk towards the pavilions. The other is the placements of the cubic pavilions around the landscape of the land in a dispersed way with complimentary colours to the surrounding that helped it blend in. Finally, referring to the plans that show the circulation and walkway that connects the pavilions and exhibit all the art within.

## 2.4 CASE STUDY 3: PETER HALL PERFORMING ARTS CENTRE

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FIGURE 2-24 PETER HALL PERFORMING ARTS CENTRE

---

### 2.4.1 DESCRIPTION

---

The new built theater for the Peter Hall Performing Arts Centre facilitates a new door of opportunities for the students and the local community in the many genres of the arts. The design of the theatre had a challenge to combine and be efficient to the many users using the building at the same time. The architect Haworth Tompkins the building with natural materials and placed photovoltaic panels on the roof of the auditorium as decreasing energy consumption of the project is one of the main aims. Another goal of the project is to fulfill the climate control needs (Haworth Tompkins' Performing Arts Centre for Perse School Cambridge, 2019).

The approach of teaching in the school and that is reflected in the design of the school by allowing students being in control of the lighting and visual equipment in the theatre, in addition to that the theater mechanics that is applied in the space is a flexible theater which allows the theatre to change depending on the activity applied in the space (Cousins, n.d.).

---

## 2.4.2 CONTEXT AND SITE CONDITIONS

---

The site is placed within a densely congested area of buildings that forced the design to adjust due to surrounding elements that impacted the shape of the building. The courtyard gives more liberty and transition between the institution-building and enclosing buildings, and the yard helps to create a sense of space and lack of closeness.

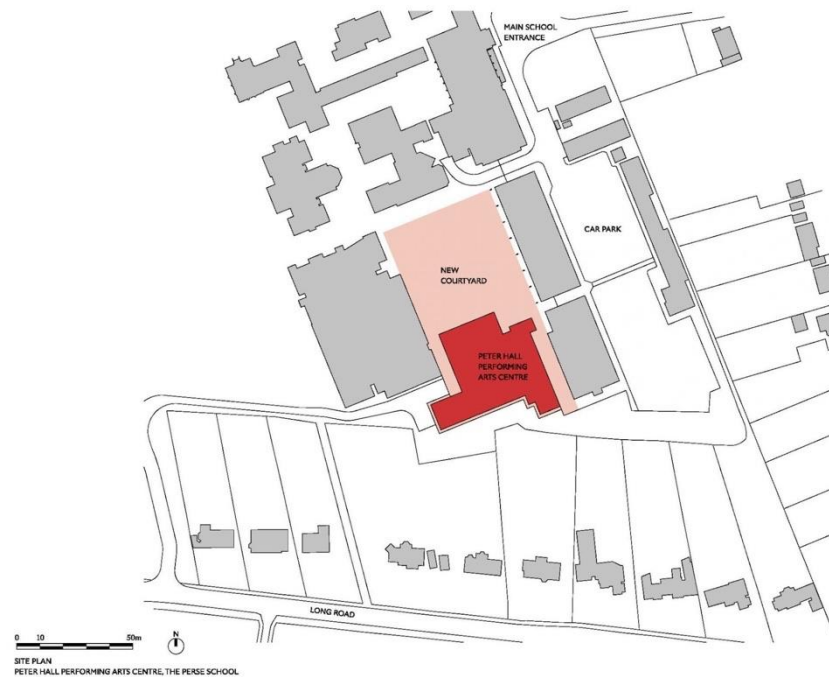


FIGURE 2-26 SITE LAYOUT

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## 2.4.3 FLOOR PLAN ANALYSIS

---

The ground floor divides the entrances according to the user's needs, which directs to design various entrances not to clash the different users, with each entry point dedicated to a user, this permits the user to enter the zone without having to conflict with the rest. Although the separation of zones does not prevent the users if they wanted to move around, the connection is made achievable employing the circulation that attaches the different zones. Finally, the first floor is just for the additional seats of the theatre and the services associated with the requirements of the theatre.

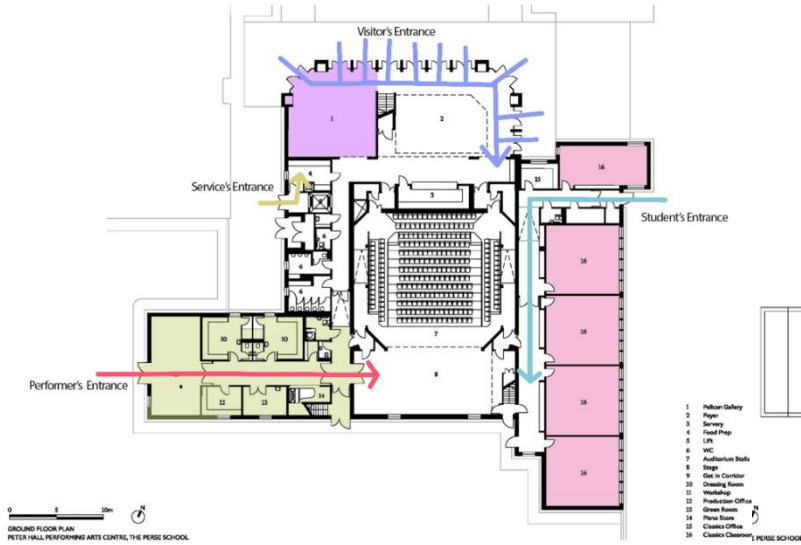


FIGURE 2-27 GROUND FLOOR PLAN

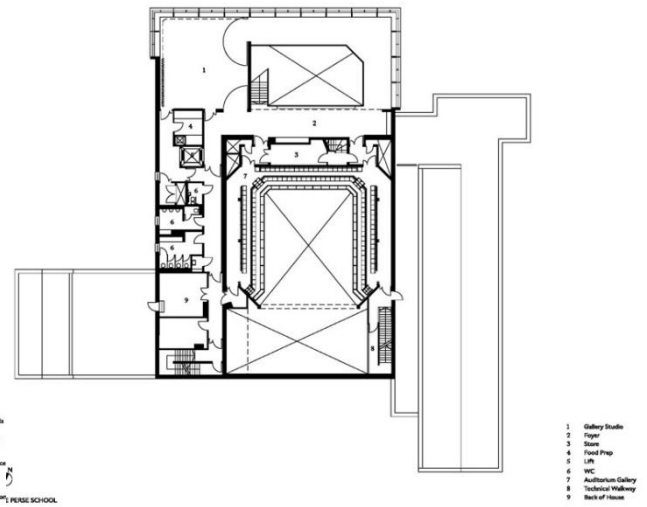


FIGURE 2-28 SECOND FLOOR

## 2.4.4 SECTIONS

The section of the school shows three factors that are significant components to the project and the concept of it. The first factor is the placement of the photovoltaic panels on the roof of the building to decrease the energy consumption; the second factor is the post and beam structure that holds up the diagrid timber ceiling. Finally, the third is showing the distribution and composition of the theatre.

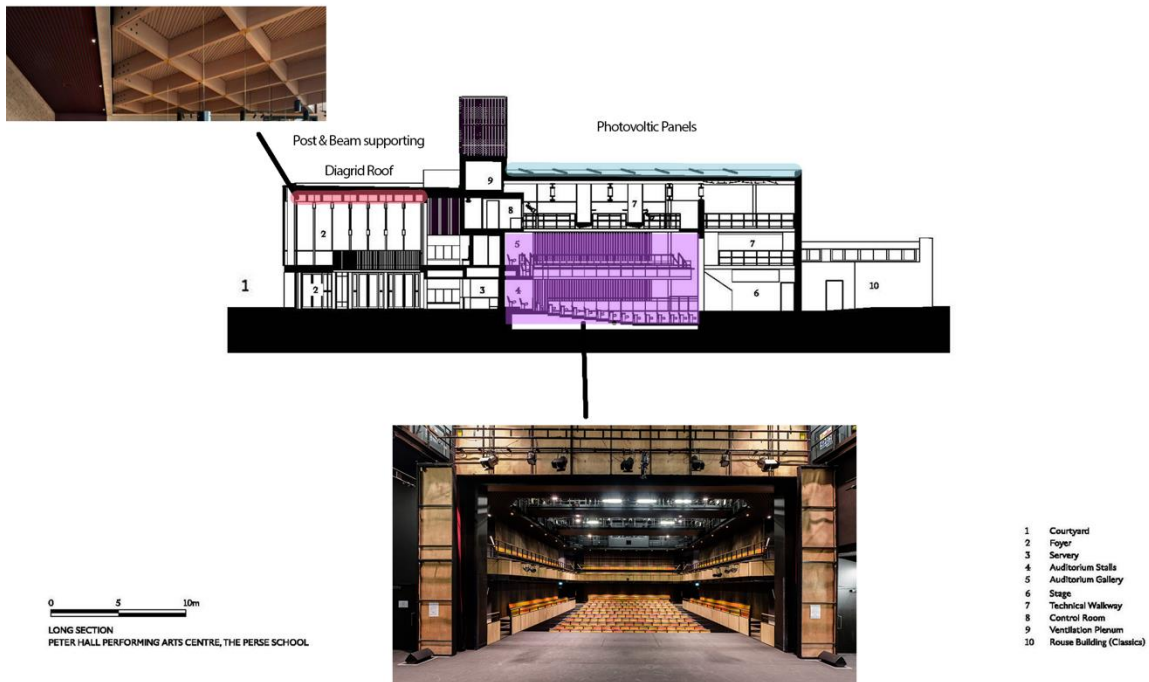


FIGURE 2-28 SECTION

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## 2.4.5 PROGRAM

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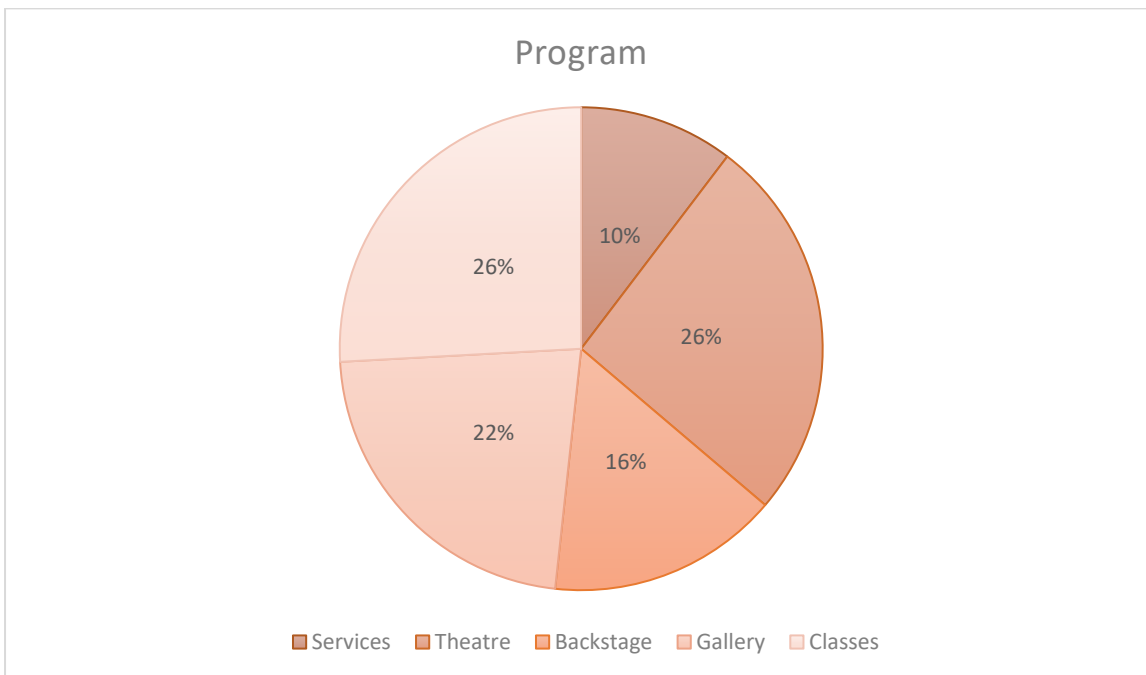


FIGURE 2-29 PROGRAM CHART

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## 2.4.6 CONCLUSION ANALYSIS

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The most important factor in this school building project is how significant it was to the project to properly distribute the entrance to each user. Keeping in mind the corresponding spaces for each user without having to conflict with other zones and creating chaos. Proving clear zoning and clearance between public spaces, students & faculty, and workstation room.



## CHAPTER 3: PROGRAM ANALYSIS

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### 3.1 INTRODUCTION

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This chapter focuses on the development, space, and function flows of the project. Learning from the case studies with the implementation of guidelines and standard of both schools and cultural buildings to complete the coherence of the Art Complex.

### 3.2 SPACE PROGRAM & FUNCTION

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#### 3.2.1 FULL PROJECT FLOWCHART

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Understanding the pervious case studies has helped develop the clear project flowchart and relationship creation between the areas and room functions. This move us forward to the zoning creation of the 4 major zones that are needed for the Art Complex:

Blue: for students + faculty

Green: faculty only

Orange: public use

Purple: shared space for intent use

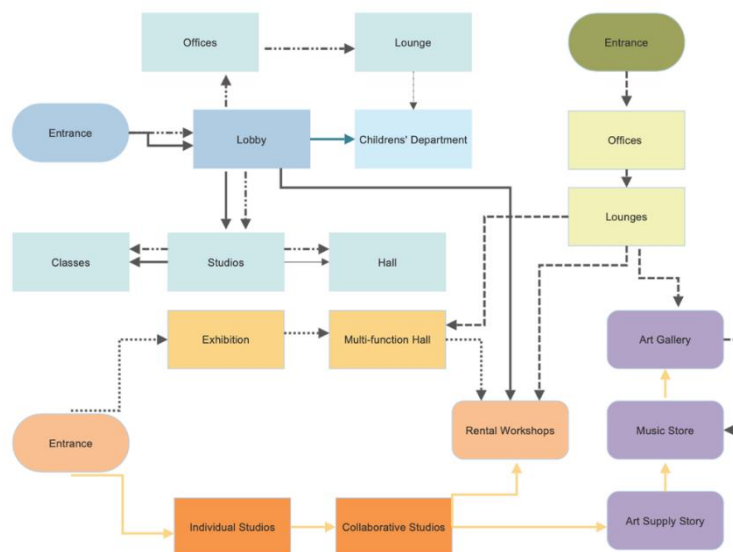


FIGURE 3-1 FULL PROGRAM CHART

With the full flow program chart this allows for clarity on further placements when it comes to the actual plan layout out phase. Ensuring clear identification of relationship will support in the circulation needed around the areas to be able to create the privacy and open spaces needed accordingly without jeopardizing the integrity of the free flow creativity that is taking place within the art complex.

### 3.2.2 EDUCATIONAL ZONE FLOWCHART

While a major part of the complex is the educational sector that is available for students to be able to obtain their arts degree within the concentration they are pursuing needs a properly functionality flow through state-of-the-art zoning comprehension.

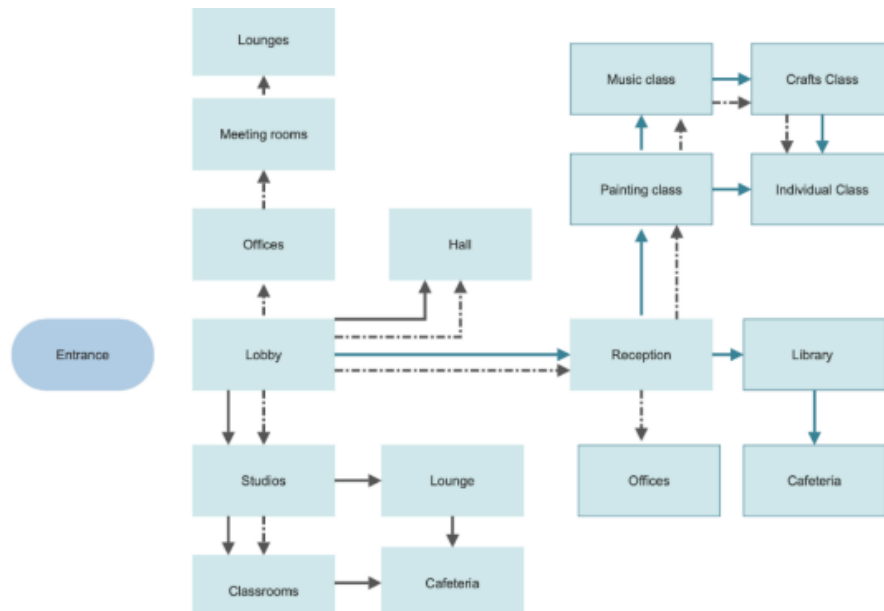


FIGURE 3-2 EDUCATIONAL FLOW CHART

In designing the room matrix for an arts education center catering to music, painting, and dance programs, it is crucial to map out the functional relationships and flow between various spaces. The matrix relationship should categorize rooms into distinct zones while the each art room zone within the flowchart represents this full area of adjacent needed rooms, including Music Rooms (such as practice rooms, recording studios, and music theory classrooms), Painting Rooms (including studio spaces, art history classrooms, and exhibition areas), and Dance Rooms (comprising dance studios, performance spaces, and dance theory classrooms). It is essential to illustrate how these rooms interact, such as the movement from theory classes to practical sessions and the shared use of performance spaces for both music and dance. Functional zones must be clearly defined, with educational, performance, and support spaces mapped out to show their interconnections. The flowchart should depict usage flows, shared resources, and scheduling coordination, using arrows to indicate how rooms are utilized in sequence or in conjunction with one another. Additionally, the diagram should consider interdisciplinary spaces designed for collaborative activities and feedback loops that link performance outcomes back to further practice and study. This comprehensive representation will facilitate efficient space management and enhance the overall educational experience within the center.

### 3.3 STANDARD & GUIDELINES

#### 3.3.1 STANDARD CLASSROOM GUIDELINES

Standard and replacement classrooms for languages and social studies, language laboratories, teaching equipment and map rooms, and other subsidiary rooms. The subjects taught in the general classroom area are: languages general studies, mathematics, religion, social studies and politics, as well as optional subjects and remedial teaching (Neufert, Neufert, Bousmaha, & Walliman, 2000). In the case of the Art Complex, the theoretical studies of the many forms of art will take place within these classrooms.

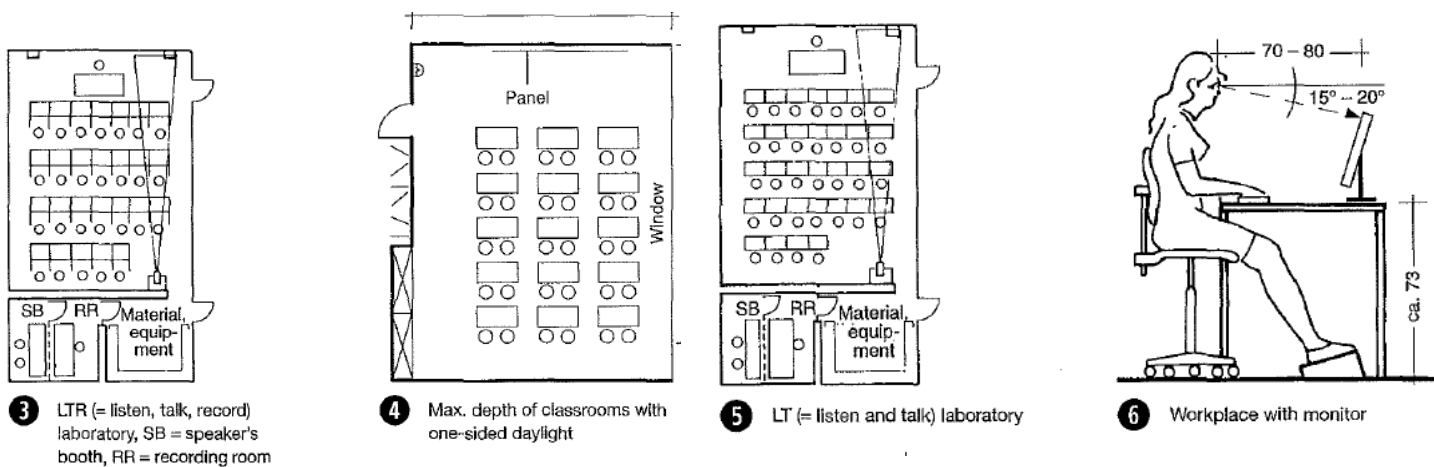


FIGURE 3-3 STANDARD CLASSROOMS

#### 3.3.2 THE ARTS CLASS SPACE REQUIREMENTS

These science teaching rooms includes teaching, teaching/practical, practical, preparation and meeting rooms, photo work and photo lab rooms. Preparation, meeting and materials room for subject combinations or single subjects: together approx. 30-40 m<sup>2</sup> or approx. 70 m<sup>2</sup>, according to the size of the science area. This room may be in an internal location with artificial lighting (Neufert, Neufert, Bousmaha, & Walliman, 2000).

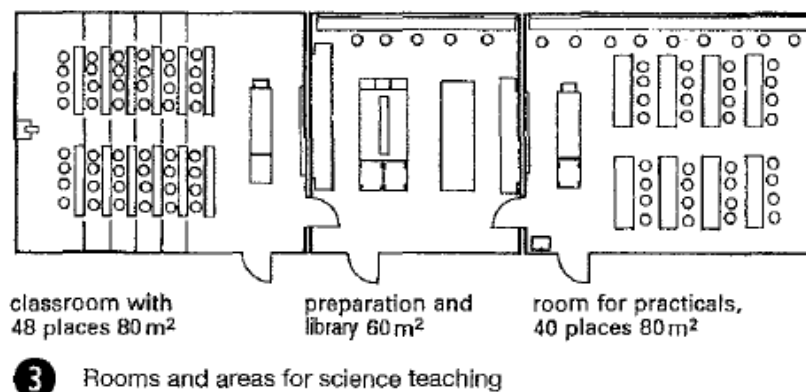


FIGURE 3-4 ART CLASS SPACE

Rooms for drawing should have uniform natural light, if possible, from the north. Music rooms should have an appropriate layout and sound insulation to avoid disturbing other facilities. The photo laboratory is a dark room for positive work (one enlargement table for 2-3 pupils, combined with wet working areas), for negative work (film development) and a film storage room. If possible, it should be north-facing with constant room temperature. Space requirement: 6-14 pupils per work group, min. 3-4m<sup>2</sup> per workplace (Neufert, Neufert, Bousmaha, & Walliman, 2000).

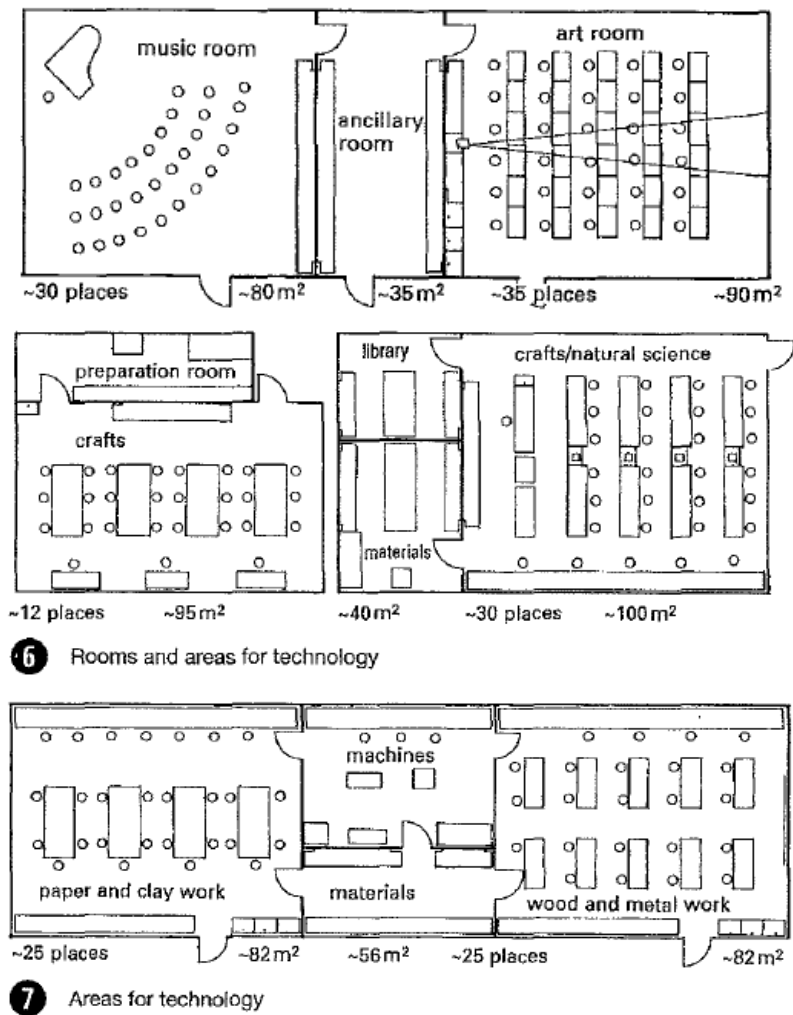
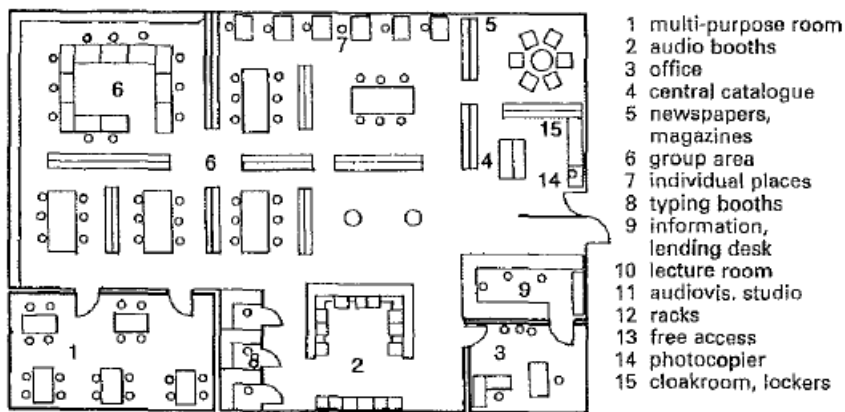


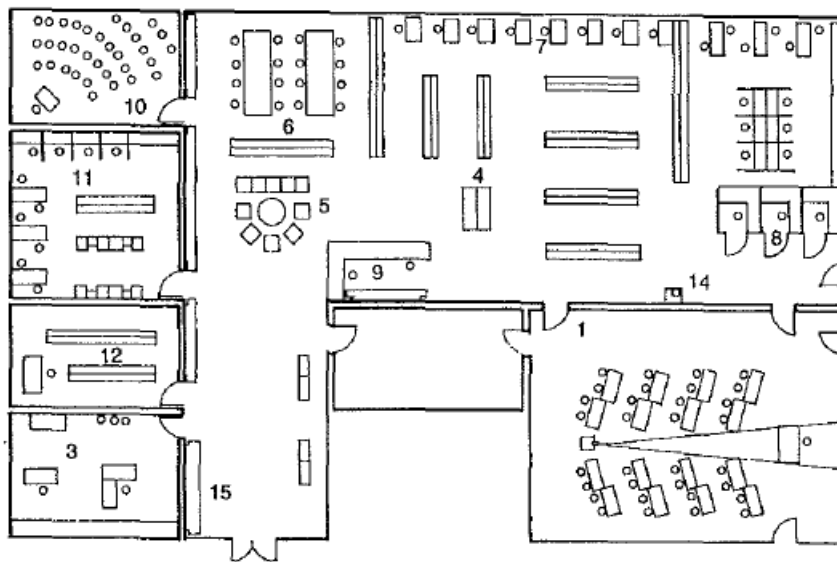
FIGURE 3-5 ART CLASS SPACE

### 3.3.3 LIBRARY AND MEDIA CENTRE

Information centre for teaching, further education and leisure. The users are pupils, teachers and external participants. Library denotes a conventional school and lending library including lending, reading and workspaces and the appropriate shelves for books and magazines. Media centre describes the extension of the library to cover recording and reproduction technology (hardware) for radio, film, television, cassettes, tapes, CD, DVD, i.e. so-called audio-visual material and a corresponding stock of software (Neufert, Neufert, Bousmaha, & Walliman, 2000).



1 Example of school library/media centre



2 Example of school library/media centre

FIGURE 3-6 ART CLASS SPACE

### 3.3.4 CAFETERIA AND KITCHEN

For a dining room with more than 400 places, the places of assembly regulations should be complied with. The size and equipment depend on the catering system, foodservice and return of plates. For young pupils meals may be served at table (portions possibly served by the teacher) otherwise self-service (from conveyor, counter, cafeteria line, free-flow cafeteria, turntable etc.). Serving capacity: from 5-15 meals/minute or 250-1 000 meals/hour with varied personnel requirement. Space required for serving system approx. 40--60 m<sup>2</sup>. Dining room size depends on number of pupils and sittings, per seat min. 1.20-1.40 m<sup>2</sup>. Larger areas should be partitioned into smaller rooms.

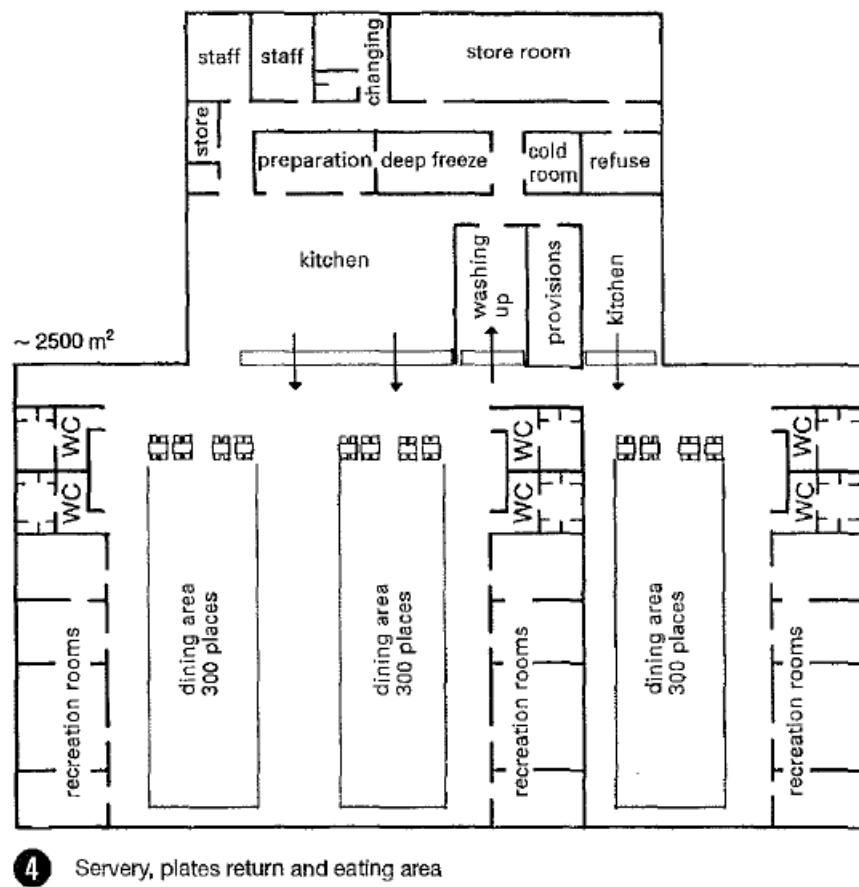


FIGURE 3-7 CAFETERIA AND KITCHEN

### 3.3.5 SANITARY FACILITIES BREAK AND CIRCULATION AREAS

Horizontal and vertical access routes are normally also emergency escape routes. Escape routes must have a clear width of min. 1.00 m/150 people but min. width of corridors in classroom areas is 2.00 m, or 1.25 m with up to 180 people. Stairs in classroom areas must be 1.25 m wide, other escape routes 1.00 m wide. Max. length of escape routes: 25 m measured in a straight line from the stairwell door to the farthest workplace, or 30 m in an indirect line to the centre of the room. Capacity of stairs dependent on number of users and average occupancy, e.g. stair width: 0.80 m for each 100 people (min. 1.25 m, but not wider than 2.50 m) (Neufert, Neufert, Bousmaha, & Walliman, 2000).

Doors may open inward or outward. Outward opening doors should not endanger pupils and project max. 20 em into the escape route. Doors from rooms with more than 40 pupils or increased fire risk (chemistry, work rooms) must open in the direction of the escape route. The pitch of stairs is to be based on length of pace: 2 riser + tread= 59-65 em. Ramps 6% gradient (Neufert, Neufert, Bousmaha, & Walliman, 2000) .

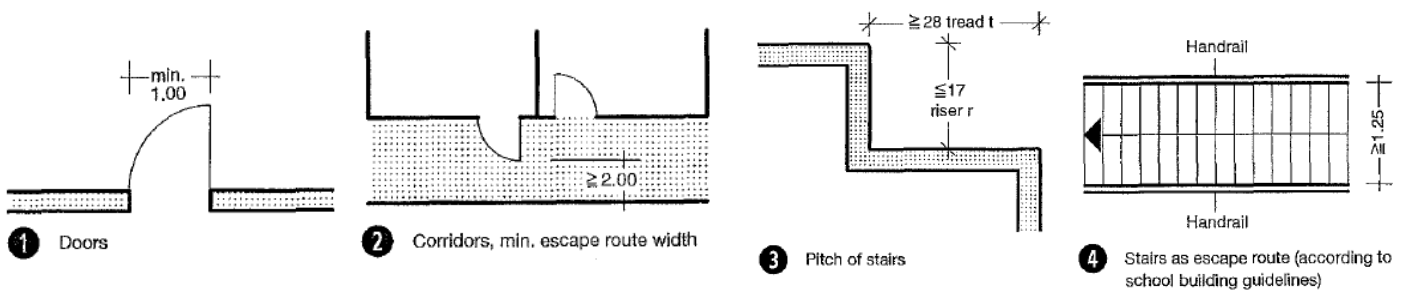


FIGURE 3-9 CIRCULATION ELEMENTS

The necessary WCs, urinals and washbasins are provided according to the total number of pupils (divided between boys and girls) according to the school building guidelines -7 \$. One washbasin is provided for every boys' WC or for every two girls' WCs. Toilets should be as directly lit and ventilated as possible. The accesses for girls and boys are to be separate (Neufert, Neufert, Bousmaha, & Walliman, 2000).

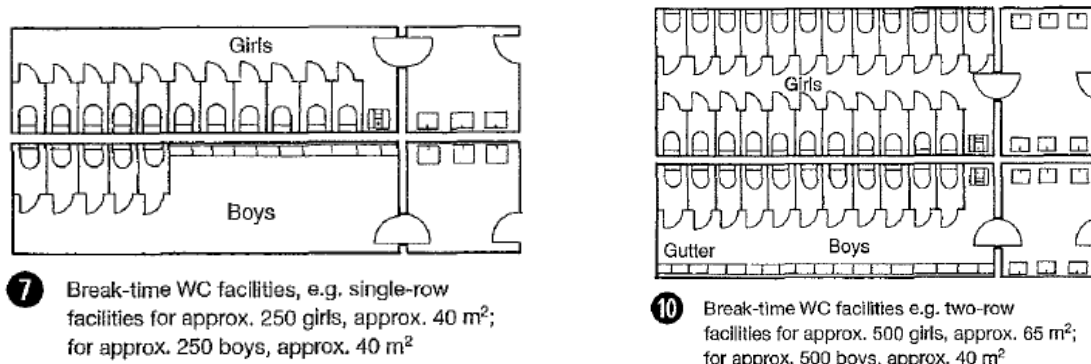
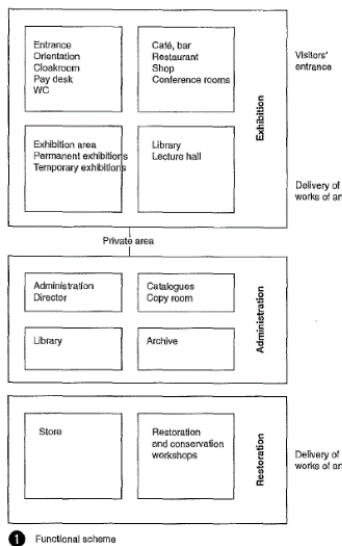


FIGURE 3-10 SANITARY FACILITIES



### 3.3.6 MUSEUM FORM & FUNCTIONALITY

A museum is a building that holds human development through the many aspects that flow through human life from cultural, scientific, artistic, or historical significance. A Museum as a function holds, collects, receives, documents, interprets, research, and communications through display. This functionality and portray of museums allow for the following different formats of museum to be developed (Neufert, Neufert, Bousmaha, & Walliman, 2000):



**Art gallery:** Collection of works of fine art (including craftworks and graphics).

**Cultural history museum:** Collection of devices, weapons, clothing, written documents etc. which show the cultural development of a geographically restricted area (ethnological museum, open-air museum, local history museum).

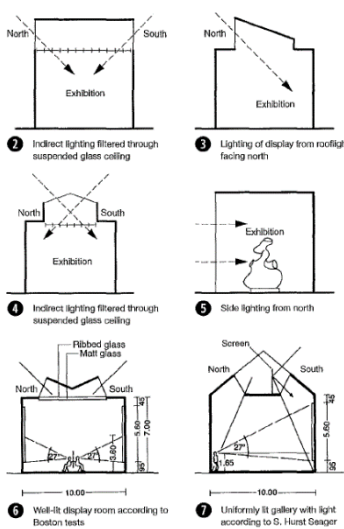
**Ethnology museum:** Works from the cultural heritage of traditional peoples and lost cultures.

**Science museum:** Collection of educational and display material connected with scientific and technical themes.

FIGURE 3-11 FUNCTION SCHEME OF MUSEUMS

### 3.3.7 LIGHTING

Within the design of the museums there should not be any direct sunlight on the objects, as this could result to the items damage. Therefore, the display rooms should be provided with flexible lighting systems: no permanently built-in light, no fixed wall and ceiling lights.



Guidelines for lighting:

Very sensitive display objects 50-80 lx

Sensitive display objects: 100-150lx

Less sensitive display objects: 150-300 lx

UV radiation must not be exceeded 25 W/m<sup>2</sup>

There is also a possibility to have a completely darkened display room.

In public room where items are not displayed, such as: entrance area, café, library, a large amount of daylight is desirable. The lighting calculations for museums are highly theoretical the quality of lighting is decisive (Neufert, Neufert, Bousmaha, & Walliman, 2000).

FIGURE 3-12 LIGHTING GUIDELINES

### 3.3.8 DISPLAY ROOMS FORMATS

The layout of display rooms is primarily determined by the relationship between the collection and its intended display concept (Neufert, Neufert, Bousmaha, & Walliman, 2000).

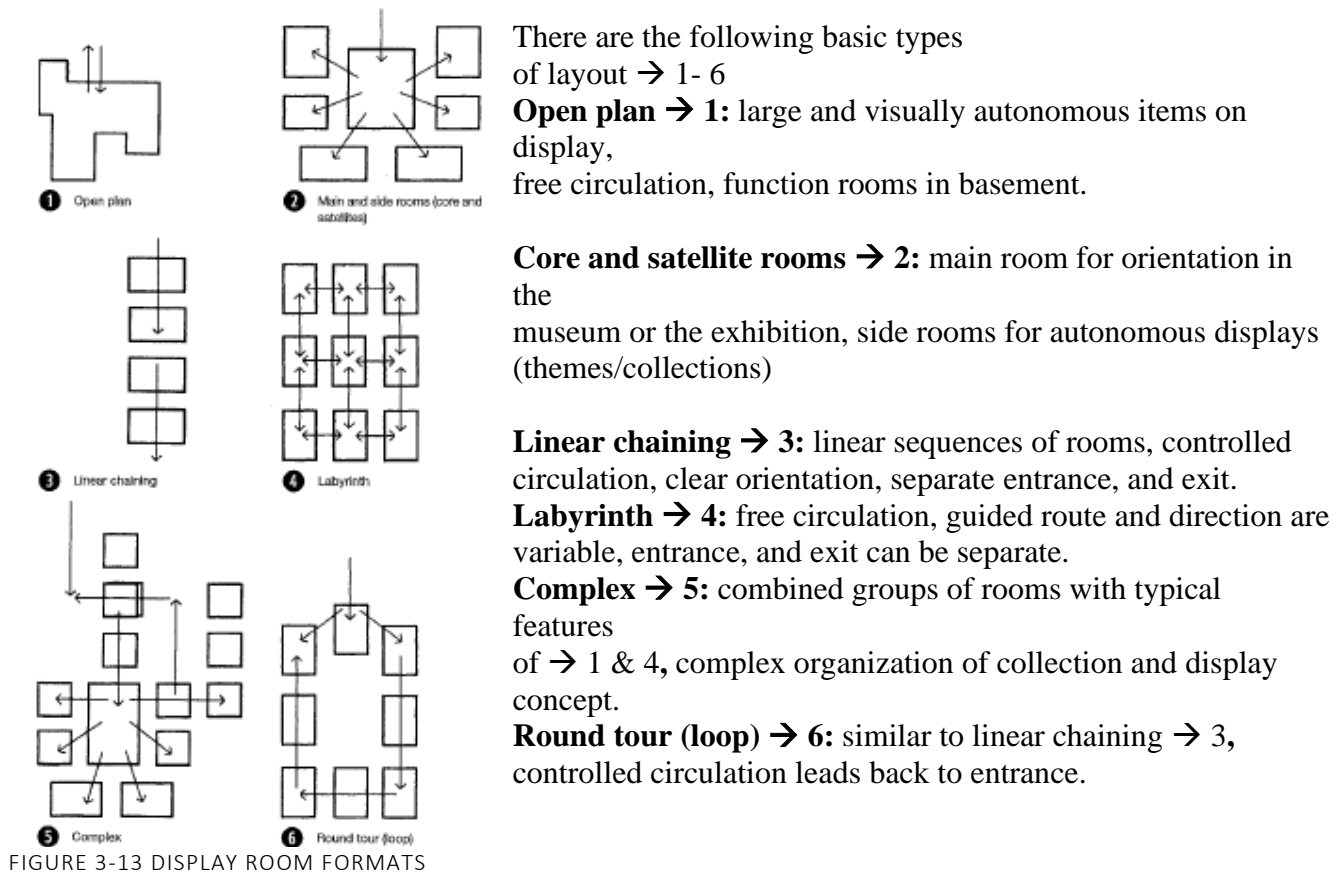


FIGURE 3-13 DISPLAY ROOM FORMATS

### 3.3.9 THE MULTI PURPOSE THEATER

This mixed form of opera, theatre and ballet is a specialty in German-speaking regions. The space is mostly characterized by the predominant influence of the opera. The frequent changes of scenery are enabled by the appropriate subsidiary rooms (store, scenery store, workshops). Example: Heilbronn City Theatre, Arch.: Biste u. Gerling 1982 ---7 p. 217 0.

### 3.4 PROGRAM ANALYSIS

#### 3.4.1 FULL PROJECT PROGRAM OVERVIEW

The proposed architecture envisions an innovative art complex designed to foster creativity, education, and cultural exchange. The project is organized into three distinct yet interconnected zones: the educational zone, cultural zone, and gallery zone. The educational zone serves as a hub for learning, offering workshops, studios, and classrooms where artists, students, and the community can engage in creative practices and art education. The cultural zone is designed to celebrate diverse cultural expressions, featuring performance spaces, lecture halls, and community centers that host a variety of events and activities, fostering cultural dialogue and understanding. Lastly, the gallery zone acts as the heart of the complex, showcasing both contemporary and traditional artworks in thoughtfully curated exhibitions, providing a platform for artists to display their work and for visitors to experience art in a dynamic and immersive environment. Together, these zones create a holistic space that nurtures the artistic spirit, supports cultural exchange, and enriches the community.

#### 3.4.1.2 EDUCATIONAL ZONE

The educational zone of the art complex is meticulously designed to cater to a diverse range of artistic disciplines, providing a nurturing environment for learning and creative exploration. This zone is divided into three specialized departments: the Fine Arts Department, the Performing Arts Department, and the Children's Department, each equipped with state-of-the-art facilities tailored to their specific needs.

The Fine Arts Department is a sanctuary for visual artists, offering dedicated classrooms and studios for painting, ceramics, sculpture, and photography. These spaces are designed to inspire creativity, with ample natural light, spacious work areas, and modern tools and equipment. Students and artists can immerse themselves in their craft, whether it's mastering traditional techniques in painting and ceramics or exploring contemporary mediums in sculpture and photography.

Spaces	Sub-Spaces	Number of Users	Number of Spaces	Capacity	Area/Person (m2)	Area/Space (m2)	Net Area	Gross Area
Fine Arts	Painting Studios	100	5	20	2.7	54	270	324
	Sculpture Studios	100	5	20	3	60	300	360
	Photography Labs	100	5	20	2.7	54	270	324
	Dark Rooms	100	1	4	2.25	9	9	10.8
	Ceramic Studios	100	5	20	3	60	300	360
	Kiln Room	100	5	2	6	12	60	72
	Classrooms	100	5	20	1.8	36	180	216
	Storage	x	4	2	2	4	16	19.2
	Department Total							1405

The Performing Arts Department focuses on nurturing talents in music, drama, and dance. It features acoustically optimized classrooms, rehearsal spaces, and performance studios where students can refine their skills. The music rooms are equipped with high-quality instruments and sound systems, while the drama and dance studios are designed with flexible staging, mirrors, and professional-grade flooring to support a wide range of performances and practices.

Spaces	Sub-Spaces	Number of Users	Number of Spaces	Capacity	Area/Person (m2)	Area/Space (m2)	Net Area	Gross Area
Performing Arts	Music Studios	100	5	20	2	40	200	240
	Drama Studios	100	5	20	3	60	300	360
	Dance Studios	100	5	20	3	60	300	360
	Flexible Theatre	220	1	220	1.3	286	286	343.2
	Dressing Rooms	100	2	15	3	45	90	108
	Classrooms	100	5	20	1.8	36	180	216
	Storage	x	3	2	2	4	12	14.4
Department Total							1368	1641.6

The Children's Department is a dynamic and inclusive space designed to engage younger minds through an afterschool program that complements their regular education. This department includes classrooms tailored for creative activities, arts and crafts, and beginner-level art education. Additionally, a daycare facility is provided for the children of faculty and students, ensuring that the academic and artistic pursuits of the community are supported with comprehensive childcare solutions. This department not only fosters a love for the arts in young children but also creates a seamless connection between their academic learning and creative expression.

Spaces	Sub-Spaces	Number of Users	Number of Spaces	Capacity	Area/Person (m2)	Area/Space (m2)	Net Area	Gross Area
Children's Department	Music Classroom	55	2	28	2	56	112	134.4
	Dance Classroom	55	2	28	2	56	112	134.4
	Crafts Classrooms	55	2	28	2	56	112	134.4
	Private Classrooms	35	12	3	2.6	7.8	93.6	112.32
	Library	200	1	50	6	300	300	360
	Daycare	60	2	30	2	60	120	144
	Clinic	100	1	6	6	36	36	43.2
	Cafeteria	200	1	80	3	240	240	288
	Reception	50	1	50	3	150	150	180
	Storage	x	3	2	2	4	12	14.4
Department Total							1287.6	1545.12

Altogether, the educational zone stands as a cornerstone of the art complex, embodying a commitment to fostering artistic growth across all ages and disciplines. Also, including the rest of the elements that construct the full department and ensure all needed counterparts are available in one space from Faculty, Social & Event settings, and services

Zones	Spaces	Sub-Spaces	Number of Users	Number of Spaces	Capacity	Area/Person (m2)	Area/Space (m2)	Net Area	Gross Area	
	Faculty	Fine Arts Individual Offices	16	16	1	10	10	160	200	
		Fine Arts Sharing Offices	16	8	2	7	14	112	140	
		Performing Arts Individual Offices	16	16	1	10	10	160	200	
		Performing Arts Sharing Offices	16	8	2	7	14	112	140	
		Children's' Department Offices	13	13	1	10	10	130	162.5	
		Department Chairs	3	3	1	25	25	75	93.75	
		Meeting Rooms	80	4	15	1.5	22.5	90	112.5	
		Lounges	80	3	30	3	90	270	337.5	
		Department Total								1109
	Social	Reception	1,000	1	170	2	340	340	408	
		Cafeteria	1,000	1	400	3	1200	1200	1440	
		Students' Lounge	1,000	3	50	3	150	450	540	
		Hall	1,000	1	500	1.2	600	600	720	
		Library	1,000	1	250	6	1500	1500	1800	
		Outdoor Area	x	x	x	x	x	x	x	
		Department Total								4090
	Services	WC Students	1,000	10	5	3	15	150	180	
		WC Faculty	80	2	3	3	9	18	21.6	
		WC Children	200	4	5	3	15	60	72	
		Mechanical Room								
		Electrical Room								
		Telecommunication								
		Elevators								
		Mosque	1,000	2	50	1.5	75	150	180	
	Department Total								378	453.6
	FULL ZONE TOTAL								9637.6	11620.57

### ***3.4.1.3 CULTURAL ZONE***

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The Cultural Zone is designed to serve as the vibrant centerpiece of the art complex, bringing together performance, exhibition, and interactive experiences to celebrate artistic expression. It features a multi-purpose hall with a seating capacity of 800, designed to accommodate concerts, theater productions, lectures, and large-scale events. Supporting spaces include dressing rooms and rehearsal rooms, each thoughtfully designed to ensure smooth transitions during performances. Three performers' lounges provide relaxation and preparation spaces for artists, creating an environment that encourages collaboration and creativity. Together, these spaces establish the cultural zone as a hub for live artistic experiences.

The Exhibition Hall is a dynamic environment dedicated to showcasing art across various mediums. It includes an indoor display area that accommodates up to 200 visitors, offering a curated experience for exhibitions in a controlled environment. Complementing this is the outdoor display area, designed for larger audiences of up to 300, where open-air installations and sculptures can be experienced in a natural setting. With ample space for viewing and interaction, the Exhibition Hall facilitates dialogue between artists and visitors, creating a platform for appreciation and engagement with art.

The Workshops Zone fosters hands-on creativity and collaboration, providing spaces for individuals and groups to explore their artistic potential. It includes collaborative workstations, designed for small groups of up to 10 participants, perfect for brainstorming and team-based projects. The individual workstations cater to artists who prefer solitude, offering dedicated spaces to focus on their craft. Additionally, rental workshops are available for temporary use, enabling flexibility for visiting artists or specific project needs. This zone supports a range of activities, from casual experimentation to professional production, ensuring accessibility for artists at all levels.

The Social Zone serves as a communal gathering space where visitors can relax, interact, and share their experiences. It includes cafés, lounges, and restaurants, each offering a welcoming atmosphere for informal meetings and downtime. Cafés are scattered throughout the complex, with spaces designed to host up to 20 people at a time, while lounges and restaurants can accommodate larger groups, with capacities of 50 each. These spaces are thoughtfully integrated into the complex to encourage social interaction and provide a well-rounded visitor experience, making the art complex a destination for creativity and community.

These zones collectively form a comprehensive and dynamic art complex, offering a diverse range of experiences and opportunities for creative engagement.

Zones	Spaces	Sub-Spaces	Number of Users	Number of Spaces	Capacity	Area/Person (m2)	Area/Space (m2)	Net Area	Gross Area
Cultural	Multi-purpose Hall	Hall	800	1	800	1.2	960	960	1248
		Dressing Rooms	100	2	15	3	45	90	108
		Rehearsal Room	100	2	30	1.5	45	90	108
		Performers Lounges	100	3	30	3	90	270	324
		Department Total							1410
	Exhibition Hall	Indoor Display	200	1	200	4	800	800	960
		Outdoor Display	300	1	300	4	1200	1200	1440
		Department Total							2000
	Workshops	Collaborative Workstation	40	4	10	4	40	160	192
		Individual Workstation	10	10	1	15	15	150	180
		Rental Workshops	50	5	10	2.7	27	135	162
		Department Total							445
	Social	Cafes	1,000	4	20	2	40	160	192
		Lounges	1,000	3	50	3	150	450	540
		Restaurants	1,000	2	50	2	100	200	240
		Department Total							810
	Administration	Manager Office	1	1	1	25	25	25	30
		Open Office Workspace	20	2	10	7	70	140	168
		Individual Offices	20	20	1	10	10	200	240
		Meeting Rooms	40	4	15	1.5	22.5	90	108
		Faculty Lounge	40	1	20	3	60	60	72
		Department Total							515
	Services	WC	1,000	10	2	1.5	3	30	36
		Mechanical Room							
		Electrical Room							
		Telecommunication							
		Elevators							
Mosque		1,000	2	50	1.5	75	150	180	
Department Total							180	216	
FULL ZONE TOTAL								5360	6528

### 3.4.1.2 GALLERY ZONE

The Gallery Zone is a curated space that blends artistic appreciation with creative commerce, providing a holistic experience for visitors and art enthusiasts. This zone comprises three key sub-spaces: the Art Gallery, Music Store, and Art Supply Store, each designed to enrich the artistic journey.

The Art Gallery is a dedicated space for showcasing artworks, allowing visitors to immerse themselves in a variety of exhibitions. With a capacity for up to 20 users per space, the gallery is thoughtfully designed to offer an intimate viewing experience, encouraging deeper engagement with the art on display.

Adjacent to the gallery is the Music Store, a specialized retail space catering to musicians and audiophiles. Here, visitors can explore and purchase instruments, accessories, and other music-related items. Like the art gallery, it is designed to comfortably accommodate up to 20 users per space, ensuring a welcoming and interactive shopping experience.

The Art Supply Store serves as a resource hub for artists of all levels, offering a wide array of materials, tools, and supplies. Its layout prioritizes accessibility and organization, allowing up to 20 users per space to browse and shop with ease.

Collectively, the Gallery Zone enhances the cultural and creative atmosphere of the complex by combining exhibition spaces with retail opportunities. This integration of viewing, inspiration, and resource access ensures that visitors can experience and participate in art in multifaceted ways.

Zones	Spaces	Sub-Spaces	Number of Users	Number of Spaces	Capacity	Area/Person (m2)	Area/Space (m2)	Net Area	Gross Area	
Gallery	Art Gallery	x	200	2	20	2	40	80	96	
	Music Store	x	200	2	20	2	40	80	96	
	Art Supply Store	x	200	2	20	2	40	80	96	
	Department Total								240	288
	FULL ZONE TOTAL								240	288



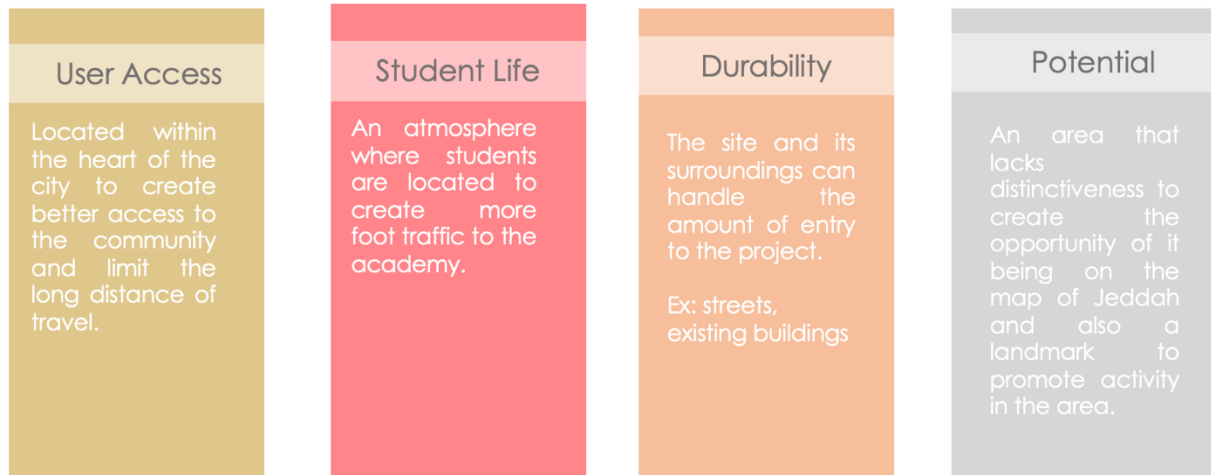
## CHAPTER 4: SITE ANALYSIS

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## 4.1 SITE CRITERIA:

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The Four pillars of the site criteria are a foundation for the site selection basing it on the impact that it will have on the project and the surroundings. The pillars consist of users' access, student life, durability, and potential.



Regarding the first pillar, the users' access is based on the travel distance from the four directions of the city, so a site located within the heart of Jeddah City would be at an immense advantage to access the project. The second pillar is acknowledging the activity and life surrounding the site, and how a site that is near student activity will produce an influential flow towards the project. The third pillar is associated with the theory of durability, and how it will handle the influx of large numbers accessing and departing the building, and how it will influence the streets and vicinities. Finally, the last pillar deals with the potential of the site location and how it would impact the neighborhood and promote more traffic around the complex

## 4.2 SITE OPTIONS:

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FIGURE 4-1 PROPOSAL SITE ONE



FIGURE 4-2 PROPSAL SITE TWO



FIGURE 4-3 PROPOSAL SITE THREE

Three choices of sites are placed and compared and contrasted between each other to find the best suitable site for the project, and all three sites located within same neighborhood of al Shatee District in Jeddah, Saudi Arabia.

#### **4.3 SITE SELECTED:**

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Sites cross-referenced according to the four pillars from the site criteria — the Site with the most accuracy was selected as the Site for the project. Site 2 was selected based on the pillars, and a more in-depth examination went through.

The Site neighborhood is in the Shatee District and lies on King Road, which is a principal road that unites Jeddah from the south to the north. In addition to King Road, there will be another link to the Site by the Jeddah Metro Network that will run near the Site that it will further accomplish the users' access pillar. The unfilled lands surrounding the Site are part of various upcoming projects planning to evolve in the area. One of the nearby projects that are planned is the new art gallery for Art Jamel; this will help with the second pillar of the site guidelines. The location has specialties that will support the enhancement of the project, being near well-known structures such as the Red Sea Mall and being near Jeddah's Corniche Waterfront.

## 4.4 SITE ANALYSIS

The site is surrounded by a variety of prominent landmarks, including the Belajio Restaurant, Radisson Blu Hotel, the Italian Consulate, the Jeddah Courthouse and Dialysis Centre, Red Sea Mall, and Yusr School. This diverse mix of civic, commercial, educational, hospitality, and diplomatic establishments reflects the eclectic nature of the neighborhood. The architectural styles of these landmarks vary significantly, ranging from modern commercial structures to traditional and institutional designs, indicating a lack of a distinctive or cohesive architectural style in the vicinity. This diversity provides an opportunity for the site to establish its own identity, potentially serving as a unifying or standout element within the neighborhood's architectural landscape.

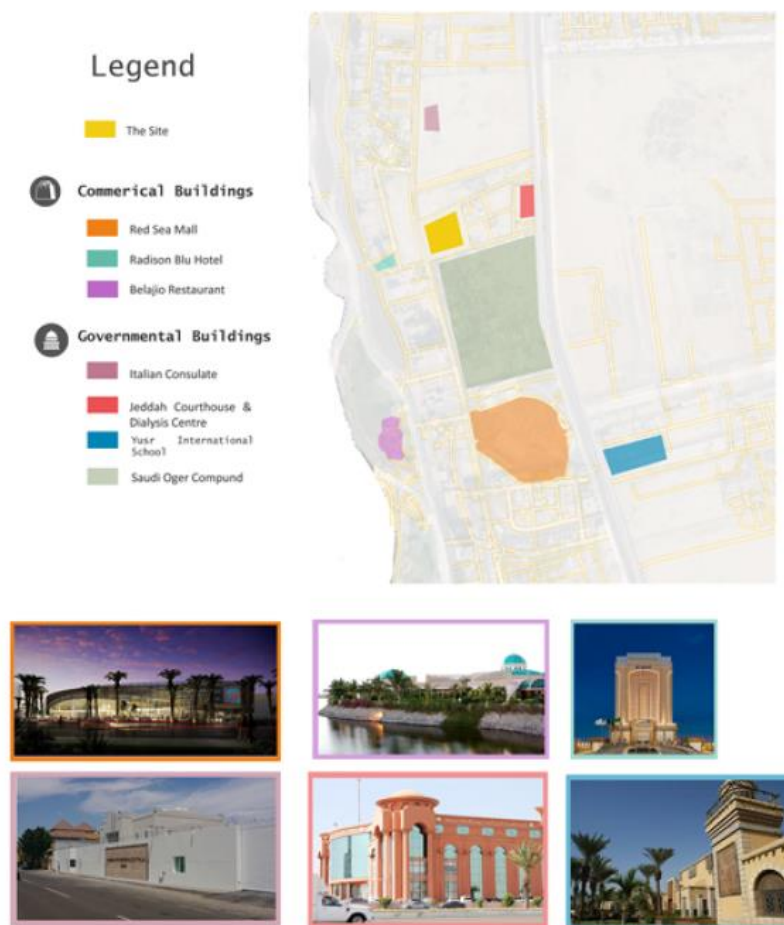


FIGURE 4-4 SITE SURROUNDINGS

The site is well-connected through four main types of streets, providing seamless access and enhancing its integration within the urban fabric. The primary connection is the King Abdulaziz Road highway, followed by the arterial Corniche Road, which provides direct access to the coastline. The third connection is the collector road of Prince Faisal Bin Fahd, serving as the project's main entrance. Additionally, local roads provide access to the site via secondary entrances, ensuring efficient circulation.

Future developments will further strengthen these connections. Notably, the upcoming Jeddah Metro Station, aligned with King Abdulaziz Road, will significantly improve public transportation options. Furthermore, the expansion of the Jameel Art Centre is expected to increase traffic flow and enhance the cultural prominence of the area, contributing to Jeddah’s recognition as a hub for the arts and urban development. These enhancements underscore the site's potential as a dynamic and accessible urban destination.

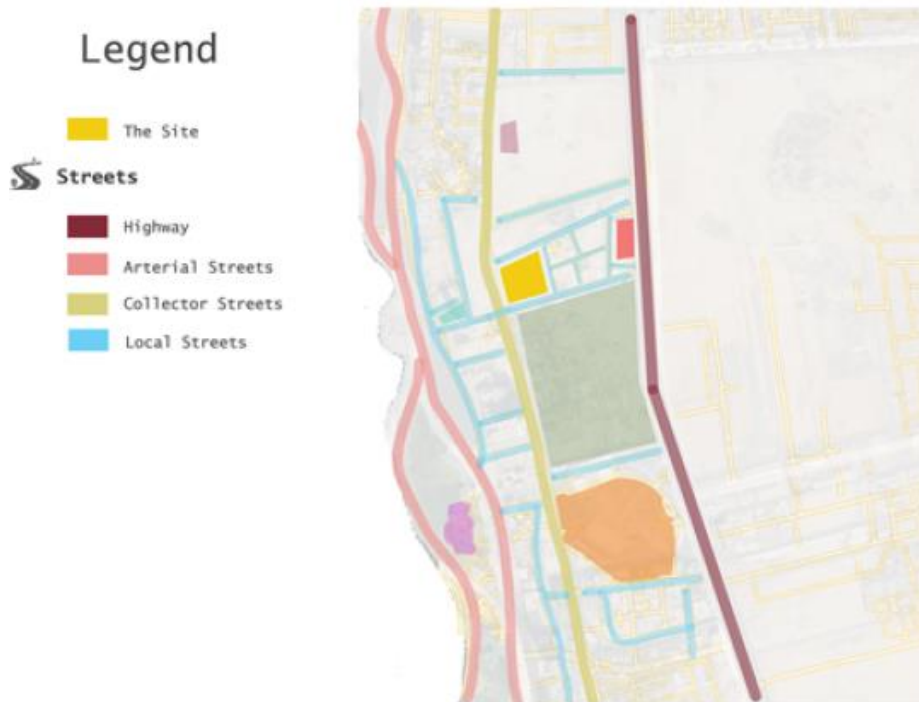


FIGURE 4-5 SITE TRAFFIC

Based on an analysis of traffic flow at three different times around the site, Corniche Road emerges as an ideal location for the primary entrance and drop-off area due to its accessibility and frequent usage. Secondary drop-off points and those designated for special occasions can be strategically placed along less busy streets to accommodate their infrequent use, ensuring smooth circulation and minimizing congestion in and around the site.

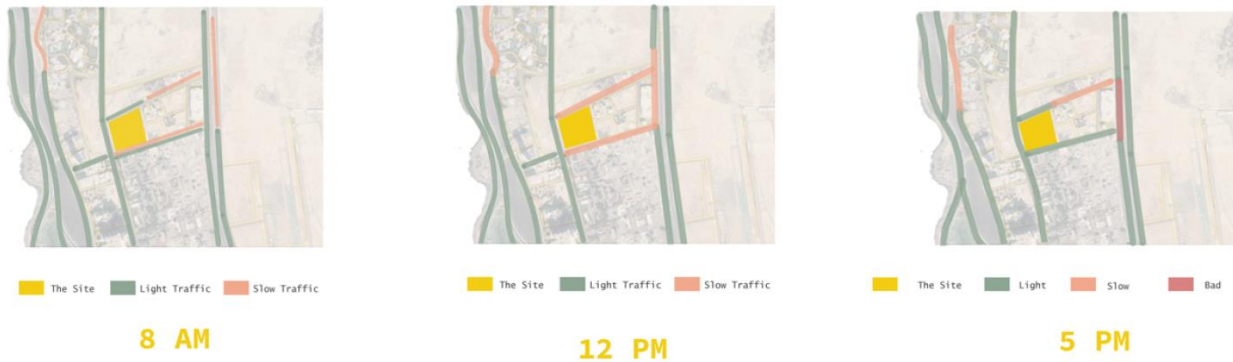


FIGURE 4-6 SITE TRAFFIC TIMINGS

The site's dimensions are as follows: 212.2 meters from the northwest, 168.8 meters from the southwest, 200.8 meters from the southeast, and 216.5 meters from the northeast, forming a roughly rectangular configuration. The site setbacks are determined based on the hierarchy and width of the surrounding streets. For example, the setback from the main street on the southwest is 15 meters, ensuring sufficient spacing for safety, circulation, and potential landscaping. These dimensions and setbacks provide a clear framework for designing the site layout while adhering to regulatory requirements and maintaining harmony with the surrounding urban context.



FIGURE 4-7 SITE SETBACKS

The analysis highlights the sun and wind paths across the site, providing essential data for optimizing orientation and ventilation in the design. Additionally, it identifies noise activity around the site, with higher levels near specific areas requiring noise mitigation strategies. The northeast corner of the site features natural growth of wild trees and bushes, offering an opportunity to integrate existing vegetation into the landscape design. The accompanying pictures are strategically placed to correspond with their respective site locations, providing a comprehensive visual understanding of the environmental context.

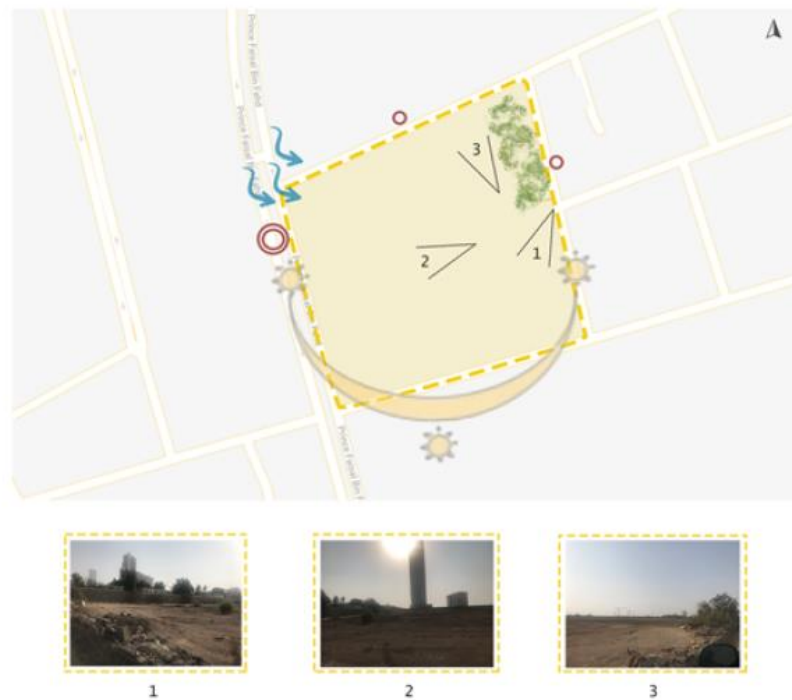


FIGURE 4-8 SITE ANALYSIS

## CHAPTER 5: ENVIRONMENTAL STUDIES

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## 5.1 SUN AND SHADOW ANALYSIS:

During the winter solstice, there is a greater need for sunlight during the early part of winter. However, for most of the year, conditions indicate a need for shade, as reflected by the warmer months requiring protection from intense heat. The appropriate design response involves incorporating shading solutions to cater to these hotter months. This can be achieved either through the architectural design of the building itself, creating self-shading elements, or by utilizing external methods such as canopies, pergolas, or landscaping to provide additional shading.

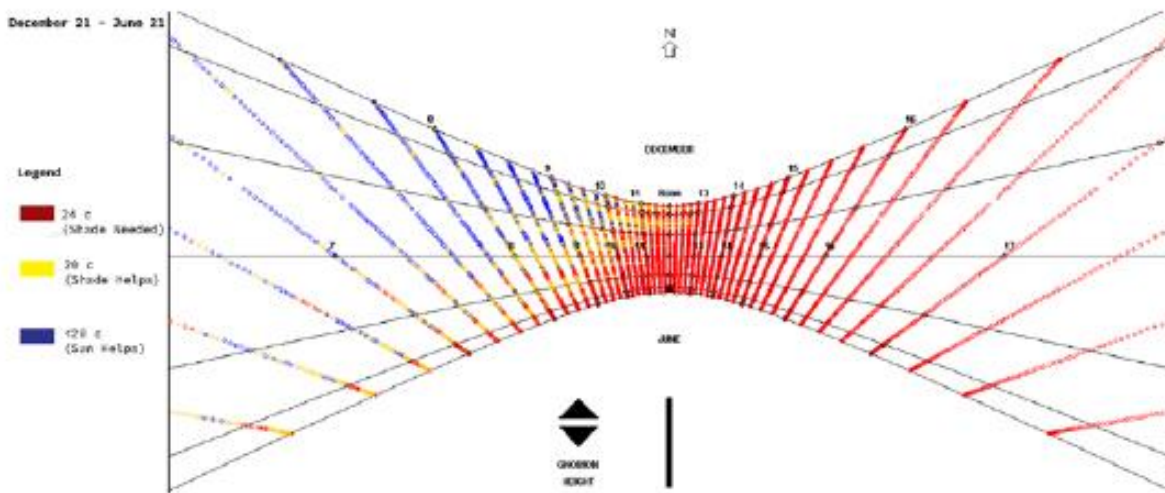


FIGURE 5-1 WINTER SOLSTICE GRAPH

During the summer solstice, conditions are predominantly marked by intense heat, with minimal cooling periods, making this time of year particularly challenging in the region. This necessitates the implementation of shading across the project to provide relief from the harsh climate. In the case of the Jeddah Art Complex, where the design features numerous open spaces and pathways connecting different buildings, shading becomes a critical design consideration to ensure comfort and usability of outdoor areas. This response could be achieved through architectural elements or external shading solutions tailored to the complex's layout and purpose.

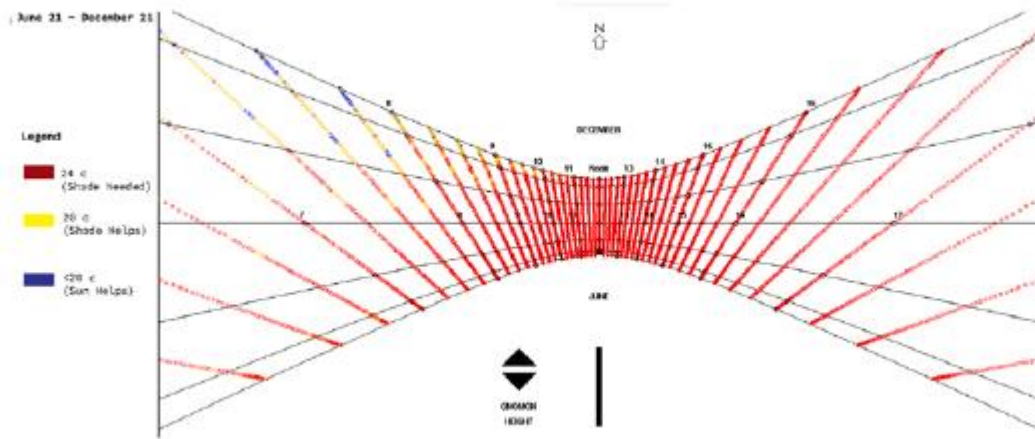


FIGURE 5-2 SUMMER SOLSTICE GRAPH

An analysis of the sun path and environmental performance in Jeddah, supported by a 3D sun simulation, revealed the need for strategic shading across the project, particularly in the central region. To address this, various shading elements or architectural enhancements can be implemented to naturally provide shade while ensuring user comfort. The design response should focus on achieving maximum thermal comfort while maintaining the aesthetic and mood of the building, striking a balance between functionality and visual identity to enhance the project's overall performance and user experience.

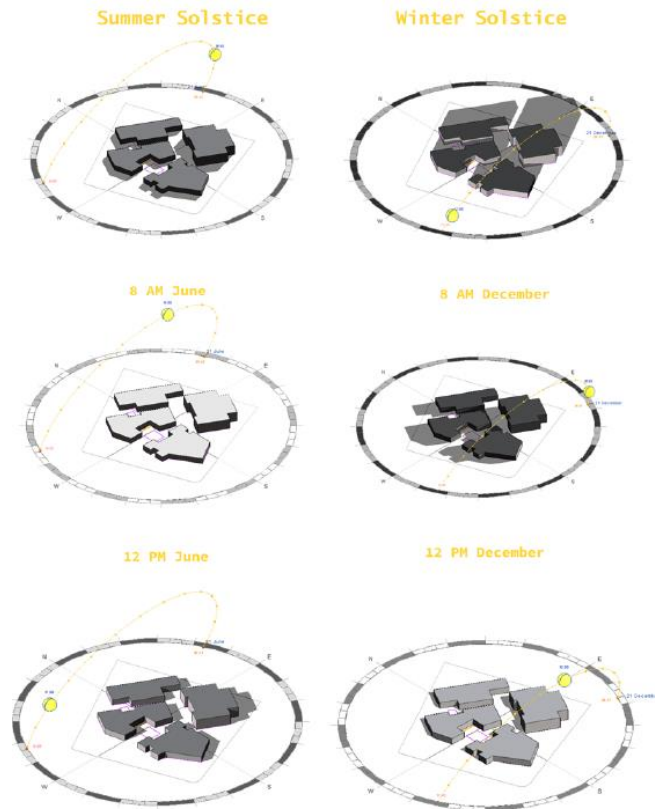


Figure 5-3 Summer and Winter Solstice at 8 AM and 12 PM

## 5.2 DESIGN GUIDES:

This analysis highlights the design considerations necessary to address the specific climatic conditions of the project’s location. Key strategies, already integrated within the project, focus on mitigating environmental challenges and ensuring the building remains fully functional. These strategies offer optimal solutions to address climate-related issues, such as heat management and energy efficiency. In Jeddah, air conditioning is an indispensable component of the design, as its absence would significantly compromise comfort and usability. Additionally, the careful selection of materials and colors to minimize heat gain further enhances the building’s performance, aligning functionality with the region’s demanding climate.

59	In this climate air conditioning will always be needed, but can be greatly reduced if building design minimizes overheating 🌱 2020
37	Window overhangs (designed for this latitude) or operable sunshades (awnings that extend in summer) can reduce or eliminate air conditioning 🌱 2020
32	Minimize or eliminate west facing glazing to reduce summer and fall afternoon heat gain 🌱 2020
68	Climate responsive buildings in hot humid climates used light weight construction with openable walls and shaded outdoor areas, raised above ground 🌱 2020
65	Climate responsive buildings in warm humid climates used high ceilings and tall operable (French) windows protected by deep overhangs and verandas 🌱 2020
38	Raise the indoor comfort thermostat setpoint to reduce air conditioning energy consumption (especially if occupants wear seasonally appropriate clothing)
30	High performance glazing on all orientations should prove cost effective (Low-E, insulated frames) in hot clear summers or dark overcast winters
42	On hot days ceiling fans or indoor air motion can make it seem cooler by 5 degrees F (2.8C) or more, thus less air conditioning is needed
57	Orient most of the glass to the north, shaded by vertical fins, in very hot climates, because there are essentially no passive solar needs 🌱 2020
17	Use plant materials (bushes, trees, ivy-covered walls) especially on the west to minimize heat gain (if summer rains support native plant growth) 🌱 2020
35	Good natural ventilation can reduce or eliminate air conditioning in warm weather, if windows are well shaded and oriented to prevailing breezes 🌱 2020
56	Screened occupancy areas and patios can provide passive comfort cooling by ventilation in warm weather and can prevent insect problems
46	High Efficiency air conditioner or heat pump (at least Energy Star) should prove cost effective in this climate
26	A radiant barrier (shiny foil) will help reduce radiated heat gain through the roof in hot climates
43	Use light colored building materials and cool roofs (with high emissivity) to minimize conducted heat gain 🌱 2020
33	Long narrow building floorplan can help maximize cross ventilation in temperate and hot humid climates 🌱 2020
39	A whole-house fan or natural ventilation can store nighttime 'coolth' in high mass interior surfaces (night flushing), to reduce or eliminate air conditioning 🌱 2020
36	To facilitate cross ventilation, locate door and window openings on opposite sides of building with larger openings facing up-wind if possible 🌱 2020
40	High mass interior surfaces (tile, slate, stone, brick or adobe) feel naturally cool on hot days and can reduce day-to-night temperature swings 🌱 2020
25	In wet climates well ventilated pitched roofs work well to shed rain and can be extended to protect entries, outdoor porches, and outdoor work areas 🌱 2020

Figure 5-4 DESIGN GUIDE PARAMETRICS

### 5.3 WIND GUIDES:

The wind analysis highlights the movement and direction of winds, providing valuable insight into their impact on the project. In Jeddah, the winds are moderate and do not require extensive structural adjustments. However, careful attention to the project’s orientation and the design of pathways can enhance airflow, allowing wind to flow smoothly through the site. This approach creates a peaceful and refreshing environment, contributing to the overall comfort and usability of the space.

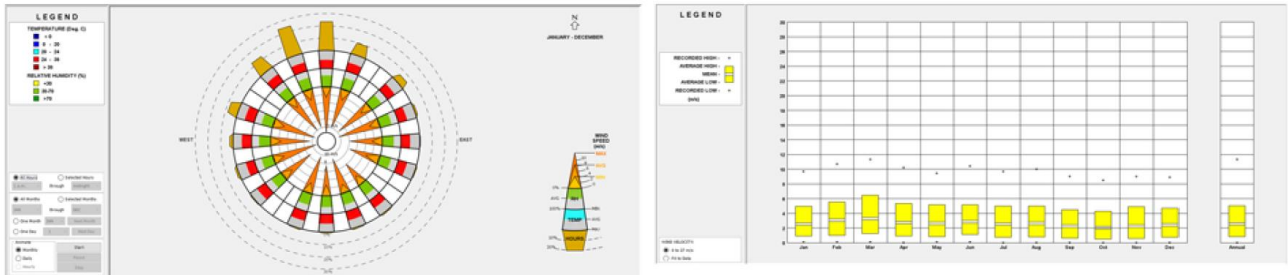


Figure 5-5 WIND ROSE AND CLIMATE DATA ANALYSIS: WIND DIRECTION, SPEED, AND HUMIDITY TRENDS

The psychrometric chart illustrates the comfort zone, represented by dark blue boxes, and highlights design strategies, depicted in various colors, that can potentially expand this zone. This chart, generated using Climate Consultant, provides insights into how environmental conditions can be optimized to enhance thermal comfort. It serves as a dynamic tool to analyze exterior air conditions and determine the processes required to modify these conditions for achieving indoor comfort. By mapping environmental variables, the chart supports the development of efficient design solutions that ensure occupant comfort while adapting to the local climate.

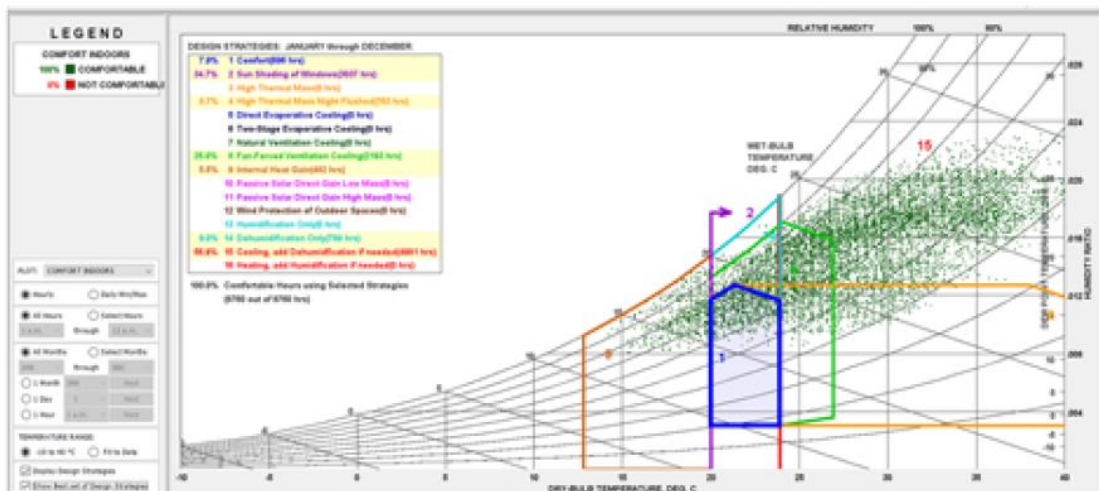


Figure 5-5 PSYCHROMETRIC CHART: THERMAL COMFORT ZONE AND CLIMATE DESIGN STRATEGIES

## CHAPTER 6 : JEDDAH ART COMPLEX PROJECT DETAILS

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## 6.1 PROGRAM BUILD UP:

### 6.1.1 FULL PROJECT PROGRAM DIAGRAM

The art complex is thoughtfully designed to harmonize educational, cultural, and gallery functions, creating a dynamic space that fosters creativity, learning, and cultural engagement. The educational zone provides diverse facilities, including classrooms, studios, and flexible spaces, supporting both formal and informal learning while encouraging collaboration and artistic experimentation. This zone serves as the foundation for nurturing creativity and skill development.

The cultural zone emphasizes community interaction and the celebration of artistic expression. With its theaters, exhibition spaces, and areas for cultural events, it offers a platform for both local and international artists to connect with audiences, enriching the cultural fabric of the community. Complementing these, the gallery spaces highlight curated exhibitions and art showcases, acting as a bridge between creators and observers, fostering inspiration and dialogue.

The seamless integration of these zones within the complex reflects a holistic approach to design, where each function enhances the others. Supporting amenities and carefully planned circulation contribute to a user-friendly and vibrant environment, positioning the complex as a vital hub for education, art, and culture in the region.

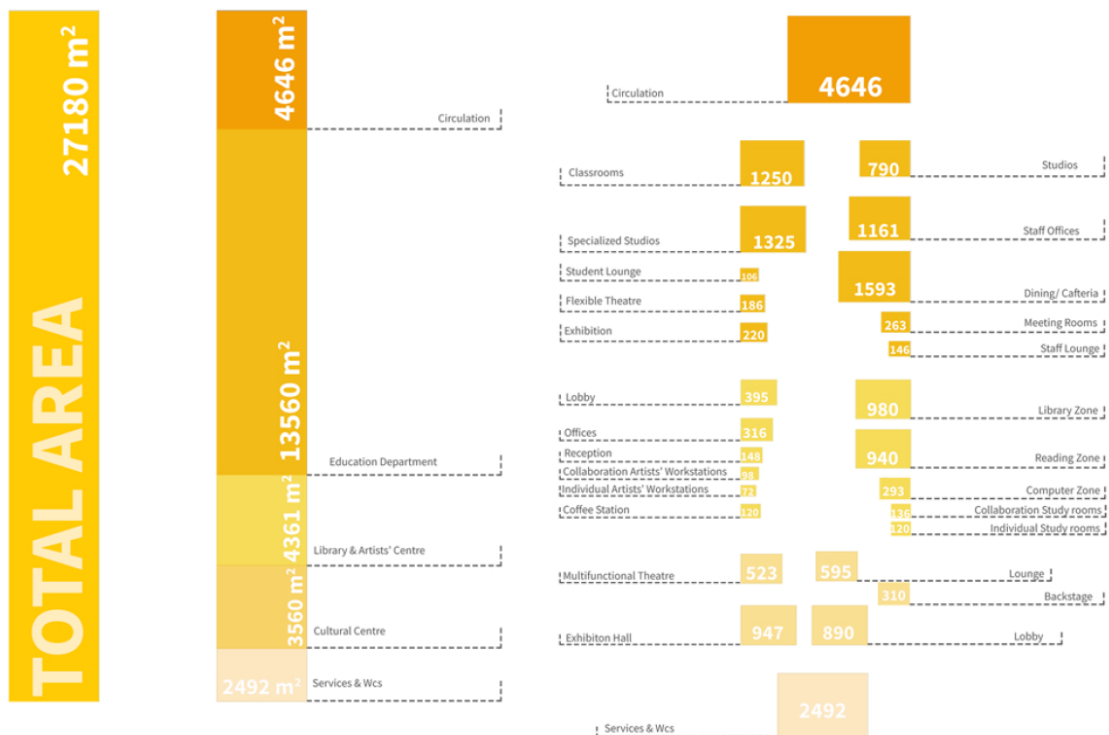


Figure 6-1 PROGRAM DIAGRAM

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## 6.1.2 PROJECT FOOTPRINT

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The vertical connection between the ground and first floors of the art complex is designed to balance functionality and differentiation, ensuring an optimized spatial flow. Each floor is tailored to specific needs, with the ground floor emphasizing accessibility and communal spaces, while the first-floor houses more specialized and private functions. Despite these differences, seamless vertical integration is achieved through strategically placed circulation elements such as staircases, elevators, and ramps, facilitating efficient movement throughout the building. This thoughtful approach ensures a cohesive design, enabling intuitive navigation while maintaining the distinct purpose and character of each floor, ultimately creating a functional and harmonious architectural experience.

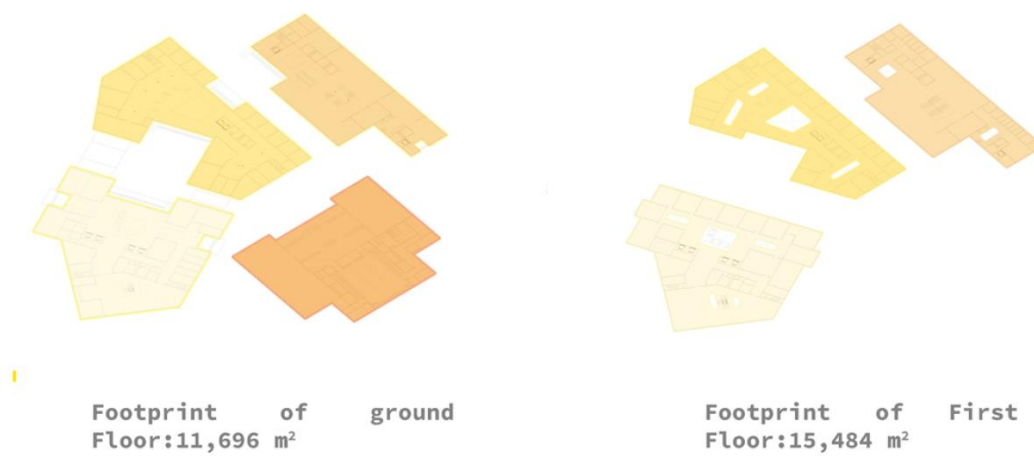


Figure 6-2 PROGRAM FOOTPRINT DIAGRAM

## 6.2 CONCEPT CREATION:

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The concept of the design is built upon three core pillars: Connectivity, Minimalism, and Emphasis, each contributing to the overall architectural identity and functionality of the project.

### Connectivity:

The design emphasizes seamless integration between the buildings within the complex to create a unified and harmonious space. This is achieved through carefully planned visual bridges and pathways that physically and visually connect the various structures. These connections not only enhance movement and accessibility but also create a sense of cohesion, allowing the complex to function as a single entity rather than separate components.

### Minimalism:

A minimalist approach is reflected in the material selection and the architectural forms of the buildings. Clean, simple shapes and a structured layout ensure the design is both modern and timeless. This minimalism avoids revealing explicit typological features, allowing the spaces to adapt to a wide range of functions while maintaining a sleek and sophisticated aesthetic. The restrained use of materials further ensures durability and sustainability, creating a design that is visually appealing without unnecessary complexity.

### Emphasis:

The design prioritizes roadside presence and visual impact, particularly at the entrances. By incorporating detailed façade treatments, these areas are designed to be visually striking and aesthetically pleasing, capturing the attention of passersby. The interplay of textures, materials, and geometry at these focal points ensures that the entrances serve as landmarks, drawing people into the complex while making a strong architectural statement.

Together, these pillars—Connectivity, Minimalism, and Emphasis—form a cohesive design strategy that balances functionality, aesthetic appeal, and a strong identity, ensuring the project resonates with users and its surrounding context.



### 6.3 FLOOR PLAN:

#### 6.3.1 GROUND FLOOR

The ground floor of the campus is composed of four distinct buildings, each serving a specific function. Two of the buildings are dedicated to academic activities, housing faculty offices, specialized studios, classrooms, and essential services to support both educators and students. The remaining two buildings are designed for public use, including a theater, exhibition hall, and library. These spaces cater to local events, provide support for students, and offer a platform for local artists to collaborate or work in a shared environment. This thoughtful distribution ensures a balance between academic functions and community engagement, fostering an inclusive and versatile campus environment.



Figure 6-2 GROUND FLOOR

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### 6.3.2 FRIST FLOOR

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The first floor of the campus is composed of four buildings, each serving a specific purpose to enhance functionality and user experience. This level houses studio classrooms and traditional learning spaces, strategically positioned to face the north for optimal wind and daylight, which helps improve students' productivity. The library includes dedicated sections for individual and collaborative workshops, also located on the north side to maximize natural light and provide psychological benefits. Additionally, the theater building features an upper-level exhibition space designed to host upscale and private art collections, adding a refined cultural dimension to the campus. This thoughtful design ensures that each building contributes to a productive, inspiring, and inclusive environment.

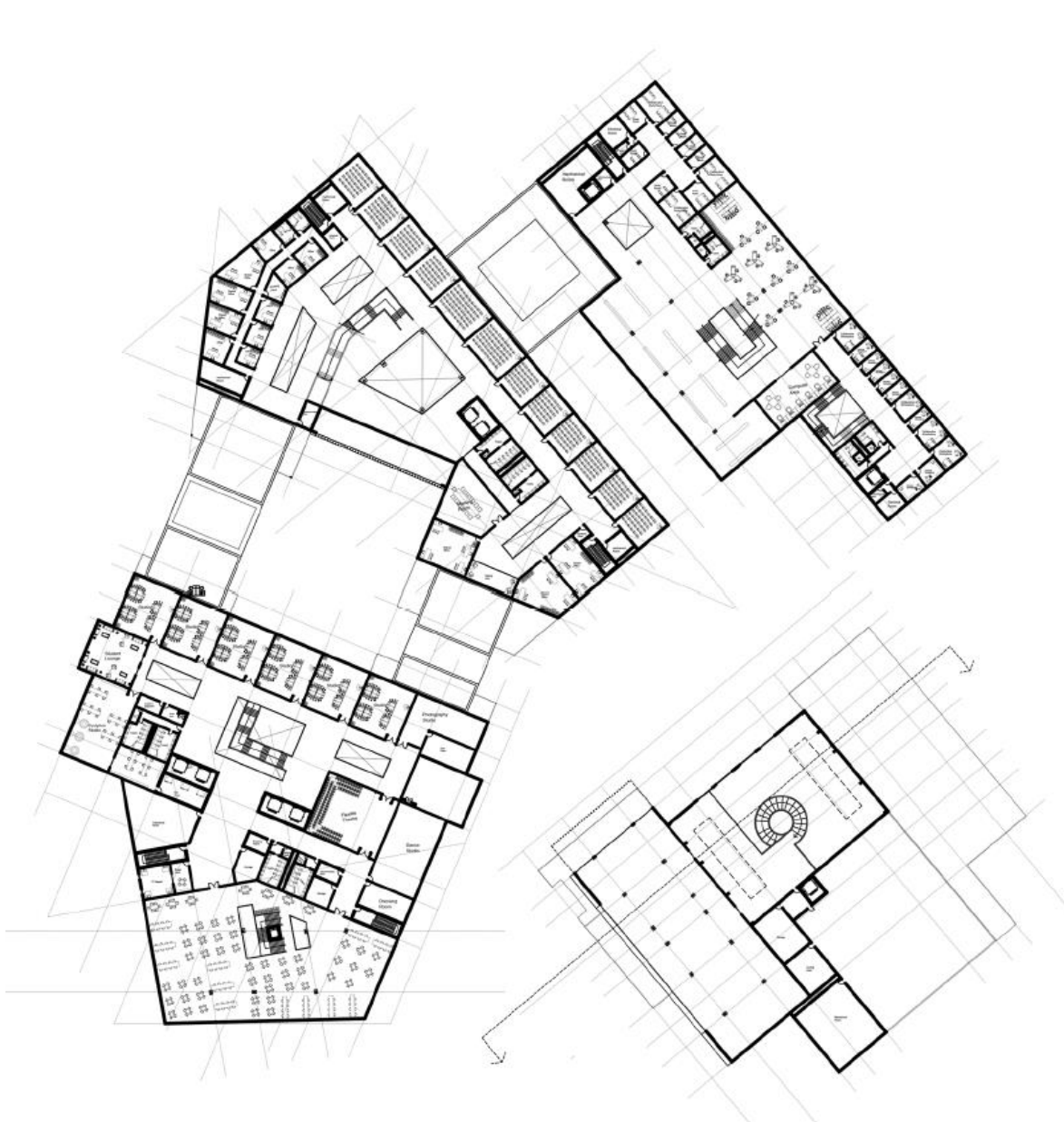


Figure 6-3 FRIST FLOOR

## 6.4 STRUCTURAL STUDIES:

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The project complex employs two types of structural systems, both of which are utilized in the theater and art gallery buildings. The decision to incorporate both systems is driven by the functional requirements of the spaces, ensuring that each area is optimized for its intended purpose. This approach not only enhances the structural performance and adaptability of the buildings but also provides an economical and efficient solution for space management. By tailoring the structural systems to meet specific needs, the design achieves a balance between functionality, cost-effectiveness, and spatial optimization.

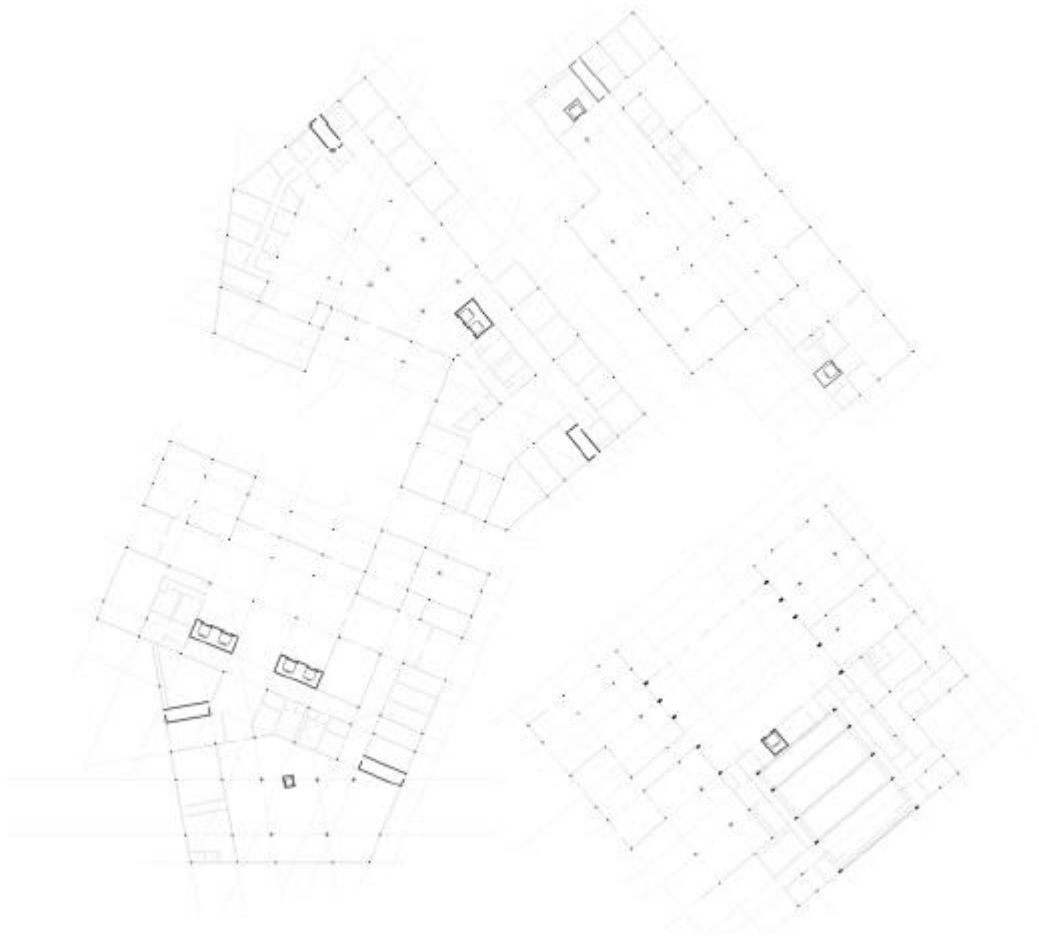


Figure 6-4 STRUCTURAL LAYOUT

The structural systems used in the project are thoughtfully selected to suit specific spatial and functional requirements. Flat slabs are employed for smaller spans due to their economical nature and the ease they offer for integrating electrical and mechanical ducts and pipework. This system eliminates the need for false ceilings, providing greater design flexibility and allowing for a maximum 12-meter span, making it an efficient choice for smaller-scale spaces.

Portal frames are used for the theater spaces, addressing the need for large, open areas without columns that might obstruct the viewer's vision. This system offers fire resistance and provides the necessary height to accommodate theater equipment, ensuring both safety and functionality. Together, these structural systems contribute to an adaptable and efficient design while maintaining the integrity and usability of the spaces they support.

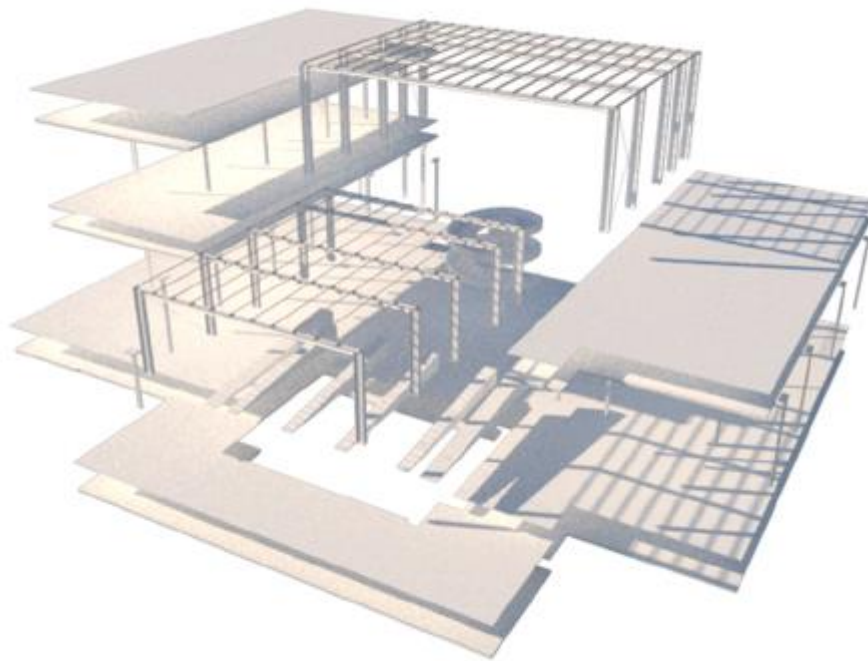


Figure 6-5 STRUCTURAL LAYOUT 2

## 6.5 ELEVATION:

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The façade design integrates a thoughtful combination of materials and textures to achieve both functionality and aesthetic appeal. Porcelain wall tiles provide a clean and durable surface, adding a modern yet timeless touch to the structure. Vertical panels composed of textured and colored glass enhance visual interest while allowing dynamic light interactions, creating a lively and engaging façade.

The windows feature varying opacities, transitioning from opaque to transparent glass to balance privacy, natural light, and outward visibility. The reception and café area are designed with wooden pillars on the façade, offering protection for the glass entrance while creating captivating patterns of light and shadow within the space. These elements together ensure the building maintains a cohesive yet distinctive architectural identity, blending functionality with artistic expression.

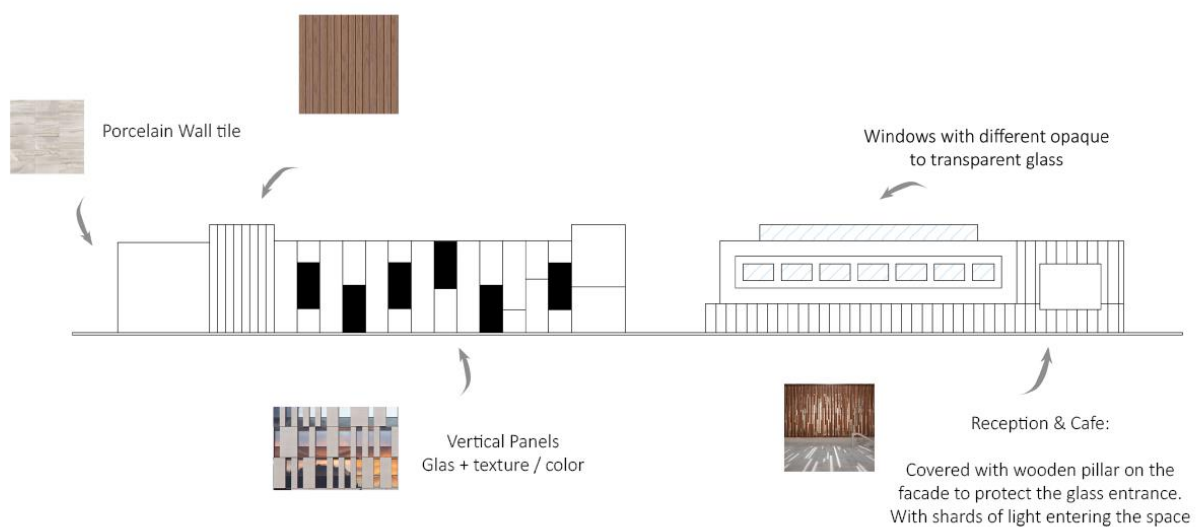


Figure 6-6 SOUTH ELEVATION

## 6.6 PARKING:

### 6.6.1 AMANAT JEDDAH REQUIREMENTS

The Amanat Jeddah Parking Calculations provide a systematic framework for determining parking requirements based on building use and occupant type. For museums and galleries, parking is allocated per 100 m<sup>2</sup> of space, ensuring adequate visitor accommodation. Transportation stations and travel halls follow the same calculation, while handicraft industries and warehouses require parking for every 70 m<sup>2</sup>, reflecting their operational needs.

For Institutes, colleges, and universities have specific criteria: students require parking for every three male and five female students, while teachers and employees are allotted parking based on their numbers (e.g., parking per teacher or per group of three to five employees).

These calculations ensure a tailored and functional parking allocation system, balancing the demands of various building typologies and user groups. This framework enhances accessibility and convenience for users while aligning with urban planning standards in Jeddah.

### Amanat Jeddah Parking calculations

Museums and galleries	Position / 100 m <sup>2</sup>	
Transportation station and travel halls	Position / 100 m <sup>2</sup>	
Handicraft industries	Position / 70 m <sup>2</sup>	
A warehouse or warehouse inside the buildings of mixed use	The position of 70 m <sup>2</sup>	
Sports stadiums	Parking / 5 spectators + bus / 150 spectators	
Other uses	The position of 100 m <sup>2</sup>	
Institutes, colleges and universities	the students	The position of / three students, 5 female students
	The teachers	Parking / teacher, 3 female teachers
	employees	Parking / 3 employees, 5 employees
	Other	Position / 100 m <sup>2</sup>

Figure 6-7 AMANAT JEDDAH PARKING CALCULATIONS

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## 6.6.2 NEUFERTS PARKING GUIDELINES

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This guide outlines the standards for parking spaces and provides clear criteria for the inclusion of accessible parking spaces in all buildings. The allocation is based on the total number of parking spaces, ensuring equitable access for individuals with disabilities. For instance, buildings with 1–25 parking spaces require at least one accessible space, while buildings with over 1,000 spaces must include 20 accessible spaces plus one additional space for every 100 spaces (or fraction thereof) beyond 1,000.

This structured approach ensures that accessibility needs are met proportionally, providing sufficient parking accommodations to promote inclusivity and compliance with accessibility regulations. By incorporating these guidelines, planners can ensure that facilities are both functional and accessible to all users.

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<b>All other accessible buildings with:</b>	
1–25 total spaces	1 accessible space
26–50 total spaces	2 accessible spaces
51–75 total spaces	3 accessible spaces
76–100 total spaces	4 accessible spaces
101–150 total spaces	5 accessible spaces
151–200 total spaces	6 accessible spaces
201–500 total spaces	6 accessible spaces, plus 1 per 100 (or fraction of 100) over 200
501–1000 total spaces	2% of the total number of spaces to be accessible
1001 or more spaces	20 accessible spaces, plus 1 per 100 (or fraction of 100) over 1000

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Figure 6-8 NEUFERTS ACCESSIBLE PARKING

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### 6.6.3 PARKING CALCULATIONS:

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The parking calculations for the project are based on Amanat Jeddah regulations, the International Building Code (IBC), and the Architect's Studio Companion, ensuring compliance with local and international standards (John Wiley & Sons, 1986).

For the theater building zone, which includes a multifunctional theater with 540 seats, parking is calculated at a ratio of one space per five seats, resulting in 108 spaces. The remaining areas of the building, which fall under the art gallery and museum category, are calculated based on the total building area (5,204 m<sup>2</sup>, excluding the theater), with one parking space allocated per 100 m<sup>2</sup>, adding 53 spaces. This brings the total parking for the theater zone to 161 spaces.

The same methodology was applied to the other buildings within the project, resulting in a total of 506 parking spaces, with an additional 10 spaces allocated for accessibility, ensuring inclusivity and compliance with accessibility standards. This structured calculation method ensures that parking provisions are proportional, functional, and meet the needs of diverse users.

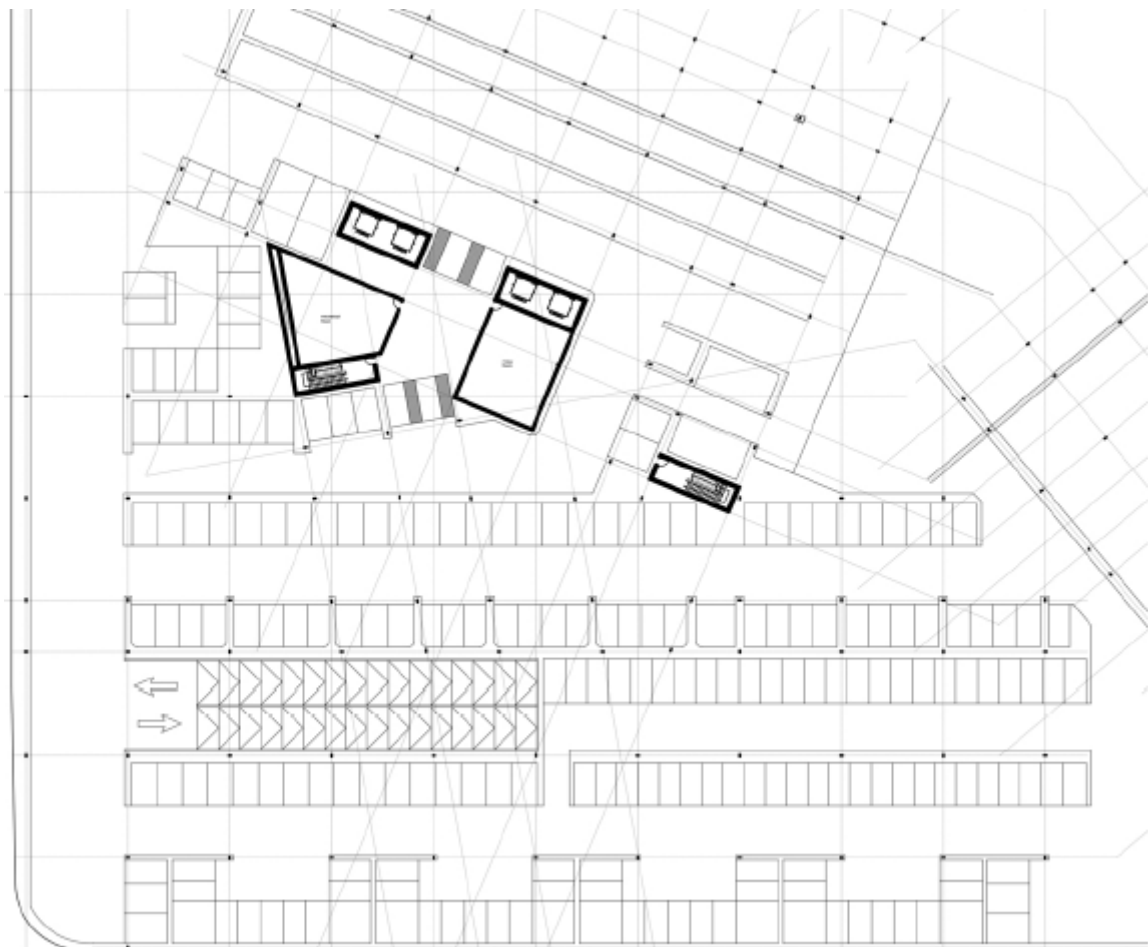


Figure 6-9 PARTIAL VIEW OF PARKING



## 6.7 MEP ANALYSIS:

### 6.7.1 MECHANICAL STUDIES AND REQUIREMENTS:

The cooling requirements for the project were calculated by determining the total project area and aligning it with the cooling capacity needed, as guided by the Architect's Studio Companion. For instance, the Class Zone building, with a total area of 7,500 m<sup>2</sup>, requires 180 cooling tons to sufficiently cool the entire structure.

To meet this demand, the cooling tower is designed with a footprint of 17.5 m<sup>2</sup>, ensuring efficient heat exchange. The Air Handling Unit (AHU) system is distributed over four rooms, each measuring 25 m<sup>2</sup>, totaling 190 m<sup>2</sup> to adequately cover the cooling needs. Additionally, supply and return ducts occupy an area of 5 m<sup>2</sup>, optimizing airflow throughout the building.

This systematic approach is applied across other zones in the project, ensuring that each area receives the appropriate cooling capacity to maintain comfort and energy efficiency while adhering to established HVAC standards (John Wiley & Sons, 1986).

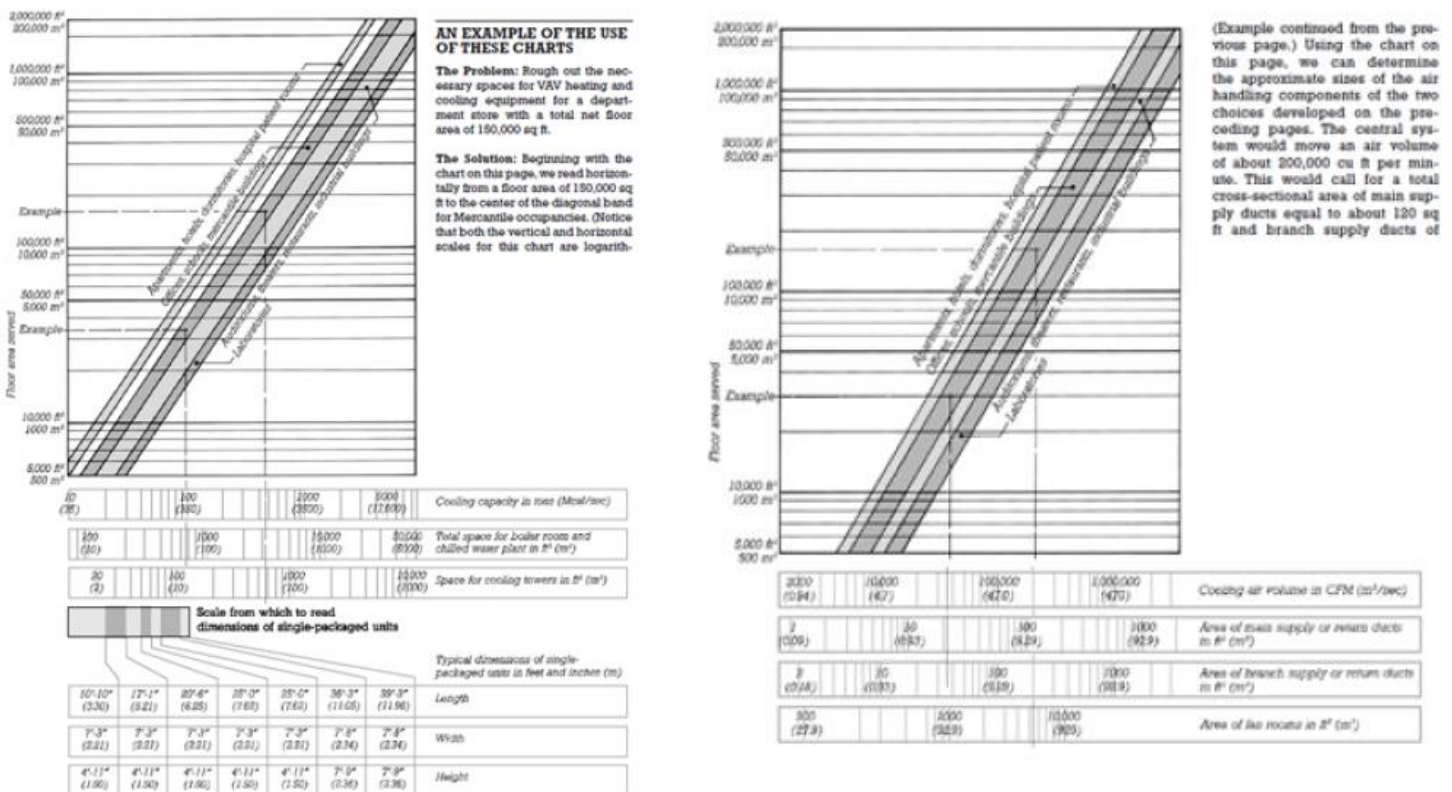


Figure 6-10 NEUFERT'S GUIDE TO HVAC

The HVAC system layout for the project is designed and implemented based on extensive studies and research to optimize efficiency and functionality. The Mechanical/AHU rooms are strategically located vertically within the basement and typical floors, ensuring streamlined ductwork and accessibility for maintenance. The chiller room, positioned in the basement, allows for centralized cooling operations while minimizing noise and thermal impact on the surrounding spaces.

Additionally, the cooling tower is located on the roof, taking advantage of open-air circulation for effective heat exchange. This placement ensures that the system remains efficient while maximizing usable interior space. These implementations reflect a careful balance between technical requirements, spatial efficiency, and operational sustainability, aligning with the project's overall design and performance objectives.

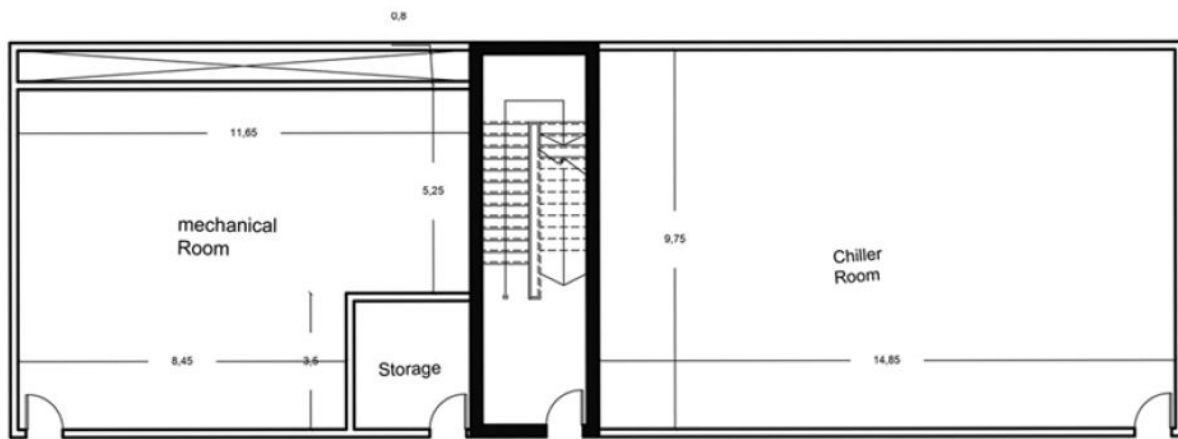


Figure 6-11 MECHANICAL & CHILLER ROOM LOCATED IN BASEMENT

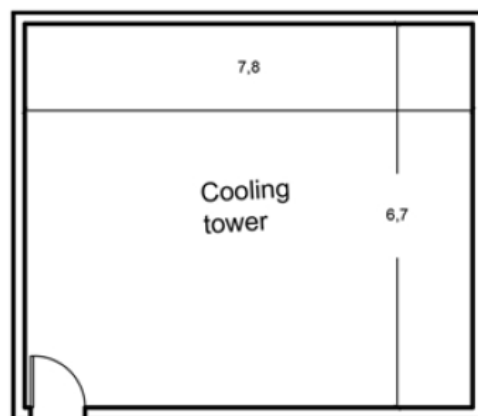


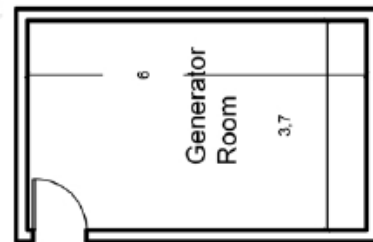
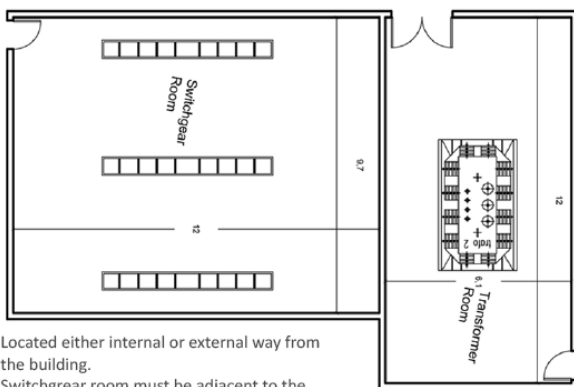
Figure 6-11 COOLING TOWER ON ROOF

## 6.7.2 ELECTRICAL AND TELECOMMUNICATIONS STUDIES:

The electrical and telecommunication systems for the project are designed according to industry standards and guidelines from the Architect's Studio Companion to ensure optimal functionality and safety. The switchgear room is strategically located adjacent to the transformer room, facilitating efficient energy distribution. If the transformer is placed inside the building, it is positioned near the main entrance with direct access to the outside, adhering to safety and accessibility requirements (John Wiley & Sons, 1986).

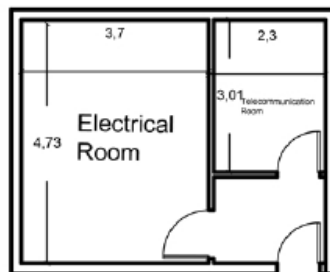
The generator room, calculated based on the project size, is located 30 meters away from the main building and parking areas to minimize noise and ensure compliance with safety regulations. The electrical and telecommunication systems are vertically stacked to optimize space and functionality, with electric panels placed every 30–40 meters and telecommunication nodes installed at intervals of 90 meters, ensuring seamless connectivity throughout the building.

This well-organized layout supports reliable power distribution and communication networks while maintaining safety, efficiency, and ease of maintenance, aligning with the project's operational needs.



Generator room calculated according to project size and located 30 meters away from building and parking lot

In addition to the transformer if placed inside must be located on the main entrance with a door leading outside



Electrical and telecommunication vertically stacked .

Figure 6-12 COOLING TOWER ON ROOF

### 6.7.3 PLUMBING STUDIES:

The plumbing requirements for the project are calculated based on occupancy numbers, following guidelines from the Architect’s Studio Companion and IBC standards. The number of water closets and sinks is determined to ensure adequate facilities for all users.

No.	CLASSIFICATION	DESCRIPTION	WATER CLOSETS (URINALS SEE SECTION 424.2 OF THE INTERNATIONAL PLUMBING CODE)		LAVATORIES	
			Male	Female	Male	Female
1	Assembly	Theaters and other buildings for the performing arts and motion pictures <sup>d</sup>	1 per 125	1 per 65	1 per 200	
		Nightclubs, bars, taverns, dance halls and buildings for similar purposes <sup>d</sup>	1 per 40	1 per 40	1 per 75	
		Restaurants, banquet halls and food courts <sup>d</sup>	1 per 75	1 per 75	1 per 200	
2	Business	Buildings for the transaction of business, professional services, other services involving merchandise, office buildings, banks, light industrial, ambulatory care and similar uses	1 per 25 for the first 50 and 1 per 50 for the remainder exceeding 50		1 per 40 for the first 80 and 1 per 80 for the remainder exceeding 80	

Figure 6-13 ARCHITECT’S STUDIO COMPATION STANDARDS

For the Studio Building Zone, which accommodates 1,819 occupants:

- Male requirements: 2 WCs for the first 50 occupants, plus 1 WC per 50 thereafter, resulting in 20 WCs. Similarly, 2 lavatories for the first 80 occupants, plus 1 lavatory per 80 thereafter, lead to 13 sinks.
- Female requirements: Calculated similarly, providing an equivalent number of fixtures for balance and equity.

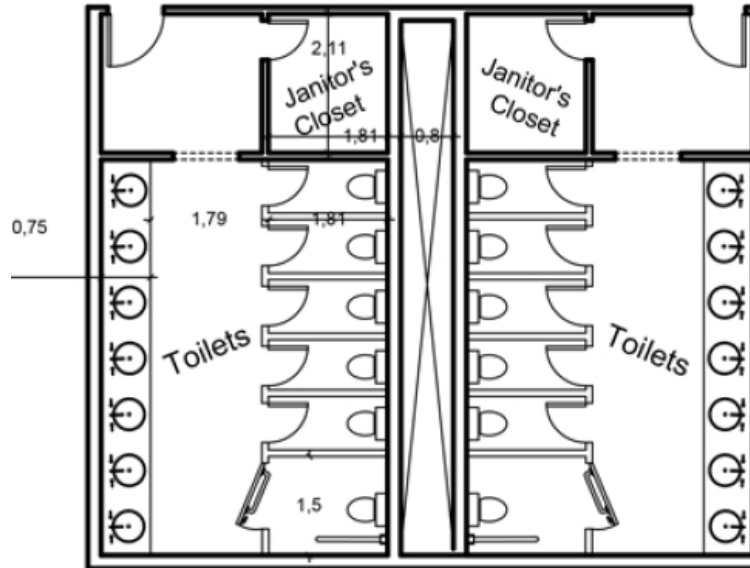


Figure 6-14 STUDIO BUILDING ZONE LAVATORIES

For the Theatre Zone Building, designed for 1,504 occupants:

- Male requirements: 1 WC per 125 occupants and 1 sink per 200 occupants, resulting in 6 WCs and 4 sinks.
- Female requirements: 1 WC per 65 occupants and 1 sink per 200 occupants, resulting in 12 WCs and 4 sinks.

In total, the project includes 40 water closets and 26 lavatories across all zones, ensuring compliance with standards and accommodating the needs of both male and female occupants. This careful planning ensures functionality and comfort for all users within the facility.

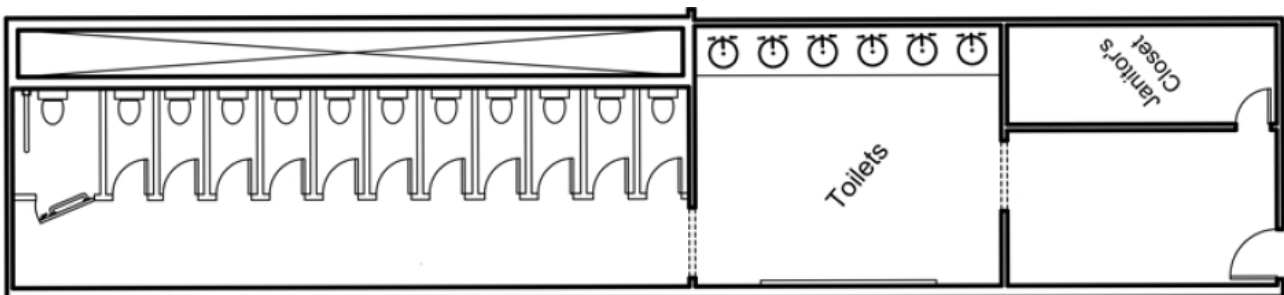


Figure 6-15 THEATRE ZONE LAVATORIES

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