

Final Architectural Design Studio Design Of Islamic Boarding School For The Deaf Student In Yogyakarta With Visual Aspects Approach

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Supervisor : Dr. Yulianto P. Prihatmaji, S.T. , M.T. , IAI, IPM.

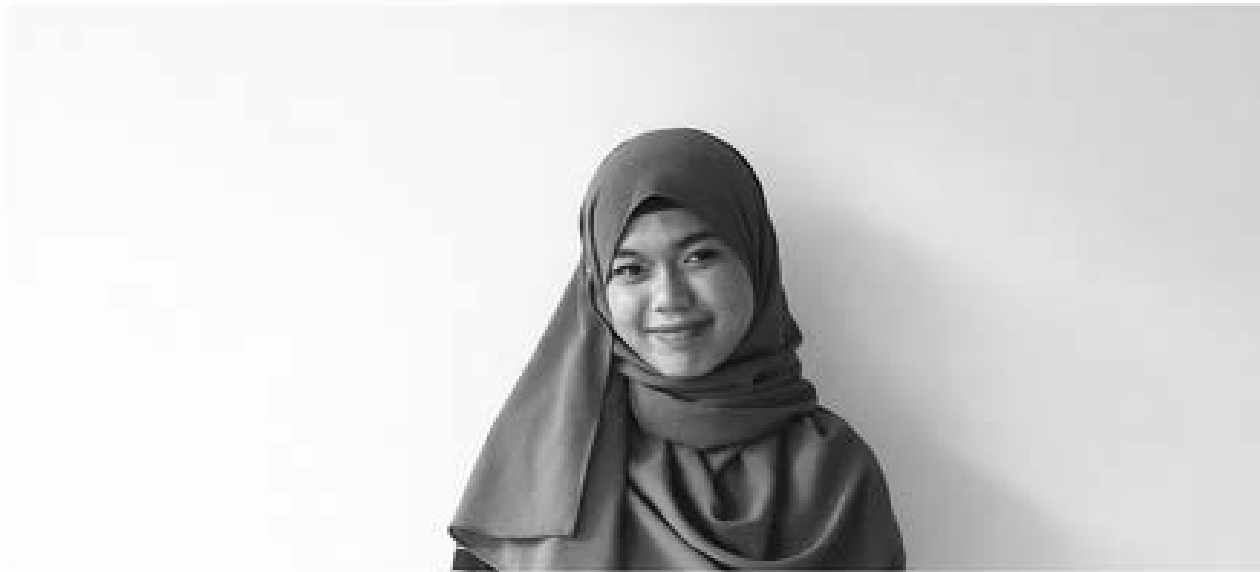


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Im falling in love with design since I was a child. At my elementary school, I learn to design in "The Sims," today I absolutely studying architecture in real life. Besides that, my hobbies are drawing and doing illustration. So, I have side jobs as a freelance illustrator, My illustration skills help my architecture drawing become more creative.

My aim has always been to produce innovative and sensitive designs. I have believed that the experience of any space is only complete when it is perceived through all human senses.



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Final Architectural Design Studio Entitled :

Design of Islamic Boarding School for the Deaf Student in Yogyakarta with Visual Concept

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Student Identification : 17512115

Final Defense Date : 23 November 2022

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Final Architectural Design Studio Entitled :

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With Visual Aspects Approach

Student's Full Name : Imara Dzakia Ariyadi
Student Identification : 17512115
Final Defense Date : 23 November 2022
Design Report Quality of FADS : ~~Average~~ Good/Excellent

With the result of that, this product is
(Recommended) ~~Not Recommended~~

To be a references for Final Architecture Design Studio

Yogyakarta, December 7th 2022

Supervisor,



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V

PREFACE

Praise and gratitude I pray for the presence of Allah SWT, as well as our prayers and greetings to our lord Prophet Muhammad SAW and his family and friends. because only by Their grace and grace, the author was able to complete the Final Architectural Design Studio entitled “Design of Islamic Boarding School for the Deaf Student in Yogyakarta with Visual Aspects” as best and as possible.

In the preparation of this undergraduate final project, the author received a lot of help, input, guidance and support from various parties. On this occasion, the author would like to express his appreciation and gratitude to:

1. Allah SWT for all His mercy and grace
2. My beloved parents for anything they gave to me
3. Mr. Dr Yulianto Purwono Prihatmaji, M.T, IPM., IAI as supervising lecturer in the Final Architectural Design Studio
4. Putu Ayu Pramanasari Agustiananda, S.T., M.A and Prof. Noor Cholis Idham, S.T., M.Arch., Ph.D., IAI as the examiner for the Final Architectural Design Studio who has provided suggestions and constructive criticism regarding the preparation for a better final project.
5. Mr. Ir. Hanif Budiman, M.T. as Head of Undergraduate Program Architecture UII.
6. Kiai Abu Kahfi as Head of Darul Ahsom School
7. All my supporting friends. Thankyou for still besides me.
8. Alfa and all his kindness.

The author is aware that this work has not been closed from the word perfect, therefore all constructive criticism and suggestions for the perfection of this undergraduate final project are expected. Hopefully this final project can help increase knowledge and experience for readers, become a reference and also learning materials and corrections can improve for the better in the future.

STATEMENT OF AUTHENTICITY

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If in the future it is proven or can be proven that this product is a plagiarism. I am willing to accept sanctions for such actions.

Yogyakarta, December 7th 2022
Who makes the statement,

A handwritten signature in black ink is written over a yellow rectangular stamp. The stamp features the Garuda Pancasila emblem and the text 'METERAI TEMPEL' and '5A545AJX017204510'.

Imara Dzakia Ariyadi

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01

INTRODUCTION

*Everything before starting these design ideas
here.*

Abstract
Is school for everyone?
Background
Special Learning for the Deaf
Darul Ahsom
Scope and Regulation
Research Framework
Novelty and Originality



VISUAL SCHOOL FOR THE DEAF

ABSTRACT

Education is one of the important keys in determining the future of a nation. Deaf children as children born with special needs basically have the same opportunities as normal children in general, including in a learning of Tahfidz Al-Qur'an. If normal children are able to memorize the Qur'an until the final stage of 30 juz so that people with disabilities. They have the right to learn basic education and learning Islam as their religion. Population growth of deaf people in Yogyakarta got rapid growth increased. The data from 2011 to 2016 state only 57 SLB still function in Yogyakarta. It might the need for education place for special people should be increased. At the same time, many SLB only provides minimum facilities. A lot of problems may be caused by the defective buildings, especially for the deaf. The application of Visual Aspects is expected to be able to provide an environment comfortable and safe and maximize the learning process of the deaf people.

Keyword : visual aspects design, Islamic Boarding School, Deaf Students



Figure 1.1 Deaf People Talking
Source : Google

IS SCHOOL FOR EVERYONE?

- Data from International Labour Organization (ILO) state that 15 persen of total population in the World is dissabilities people. They **are the biggest minorrrity group** in the World
- 82 persen of dissabilities stayed in many develop countries and living under the line of poverty. **They are facing limited access to health, education, training and worthy.**
- There are 687 children with special needs that **only 491 children attended the SLB and some were not in school.** (Bappeda DIY,2013)

In Indonesia, the regulation of dissabilities people have been regulated at the chapter 28 A UUD 1945 2016, that state "Everyone has the right to live and defend his life." This Regulation is replaced UU chapter 4 1997 about the dissabilities people. It is because the stigma that people with disabilities are considered as objects of compassion, so in the new law, people with disabilities are recognized the existence and have the same rights as other citizens.

Based on PUSDATIN from Indonesian Social Ministry in 2010, the total of dissabilities people are about 11,580,117 that the deaf dissability about 3,474,035 people. Total number of children with special needs who attended school in were 128,510 students with hearing impairments reaching 3800 children. Based on Susenas data in 2012, 81.81% of persons with disabilities did not attend and passed elementary school. A Special school for people with disabilities or Sekolah Luar Biasa (SLB) has not been sufficiently distributed in various regions, its because some of them have many obstacles for learning in common study.

Meanwhile, people with hearing impairment in the Special Region of Yogyakarta until 2016 reached 26177 people. This figure is relatively small compared to the total number of DIY residents in that year which reached 3,600,000 people. However, the number of people with disabilities should not affect the spirit of service they get.

BACKGROUND

WHAT IS DEAF ACTUALY MEANS?

Deafness can be defined as partial or total loss of all listening skills (Sudarsono, 1990). Hearing loss can be caused by damage to the inner ear, especially the cochlea, nerves, hearing, and ossicles. Causes of damage to the inside of the ear it can occur due to a genetic disorder, disease, or accident. Deafness, also known as heard hearing, is closely related to a person's ability to perceive and distinguish sounds. This ability is classifying of the leve by Arthur Boothroyd, as follows:

Tabel 1.1 Pengelompokan Ketunarunguan oleh A. Boothroyd

Kelompok	Rentang Ambang	Tingkat Ketunarunguan	Daya Tangkap Suara	Daya Beda Suara
I	15-30 dB	Ringan	Normal	Normal
II	31-60 dB	Sedang	Seimbang	Hampir normal
III	61-90 dB	Berat	Tidak ada	Tidak ada
IV	91-120 dB	Sangat Berat	Tidak ada	Tidak ada
V	>120 dB	Total	Tidak ada	Tidak ada

Catatan : Diuji pada frekuensi 500, 1000, dan 2000 Hz dan tanpa amplifikasi.
Sumber : Bunawa dan Yuwati, 2000

Ears actually have an important role in perceiving space, recognizing the environment, absorbing information, and protect themselves by defining the oral communication. For deaf people who have lost some/all of their hearing, the function of the ear can be replaced by the sense of sight as an alternative because the eyes and ears are remote senses. When the deaf congregate together they tend to alter the space to fit to their unique way of being. Our built environment

The deaf or hard-hearing persons inhabit a rich sensory world, where vision and touch are the primary means of spatial awareness and orientation. Senses of smell, taste, and touch, give them information only at close range. But its different from sense of visibility, it has their historical meanings as the greatest distance at which an observer can just see an object viewed against the horizon sky (William C. Malin). But the problem is range visibility has limited at 180 degrees ahead and cannot look to the back. So that the alternative still has gaps and need to be supported by supportive environmental design to optimize the ability sight.

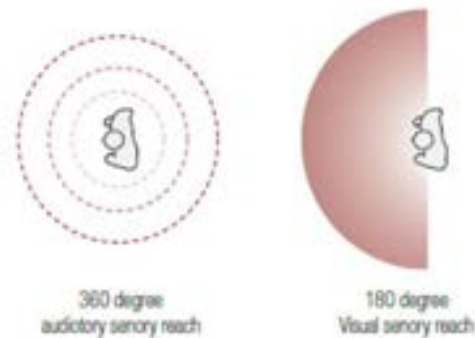


Figure 1.2 Visual Sensory Reach
Source : Deafspace Guidelines

Napoleon Hill said that Visually and experimentally design could be make deaf people visual awareness being easier. Which for the deaf the visual experience was such a very crucial point. In some cases, some facilities and infrastructures did not designed well. So, they might feel uncomfortable, and still stuck due to limited vision and hearing.

SPECIAL LEARNING FOR THE DEAF

HOW THEY ARE STUDY?

In a person's life, education has a very important role in developing themselves and carrying out their lives. Some of the important goals of the education of deaf children include the achievement of strong language skills, understandable communication skills. The Conference of Executives of the American School for the Deaf provides an understanding of the term deaf as hearing loss of up to 70 dBHL or more, while hard hearing as hearing loss of 35-69 dB. This understanding shows that there are differences between one person and another.

Some issues emerge amid the instructing and learning of Al-Quran to deaf students. One of them is the trouble in articulating the Quranic Arabic letters (Nik Hassan, 1997). The incapacity to utilize verbal dialect makes a huge affect on the deaf understudies as they cannot ace the learning aptitudes based on the educational programs given (Abdullah, 2014). Some of them were also not properly exposed to the learning of Al-Quran (Ab AzizMohd Zin, et al, 2009; Global Pekak Muslim, 2014). For critically deaf students who have lost their hearing more than 71 decibel (dB), it is hard for them to hear and imitate the sound exist around them. So some of school not too forcing them to pronounce, they can learn to remember the Quran verse then read them with American Sign Language. Dahrul Ahsom Islamic Boarding School for the Deaf learning method has two main ways. The first is by memorizing one verse

with the method of remembering through ASL repeatedly. The second is through audio-visuals by listening and watching the mentor's lips move. These two things have an attachment to the visual senses. Where to see lip movements and hand gestures as a means for students to learn.

Based on Gestalt Theory proposed by Max Wertheimer, Wolfgang Kohler and Kurt Koffka, also views light as a stimulus, stimulation occurs in the visual perception process, as the following quote "Visual perception depends on light which gestaltists say stimulates the retina and, 'as far as retinal stimulation is concerned, there is no organization, no segregation of specific units of groups. So that they assume the information delivered is depending on the light intensity and then interpreted by the eye. Visual access for deaf people plays a very important role in their lives, including to see, to provide a sense of security, self-protection, natural surveillance, wayfinding, and communication.

When these two things are related to environmental conditions and public facilities at the existing boarding school, it can be felt that they are still lacking to meet the needs of deaf people who need broad visual access and minimal visualization of information. So that one thing that can be done is to increase visual access in the built environment, it is hoped that the needs of deaf people for visual access in the environment can be met.



DARUL ASHOM

ISLAMIC BOARDING SCHOOL FOR THE DEAF

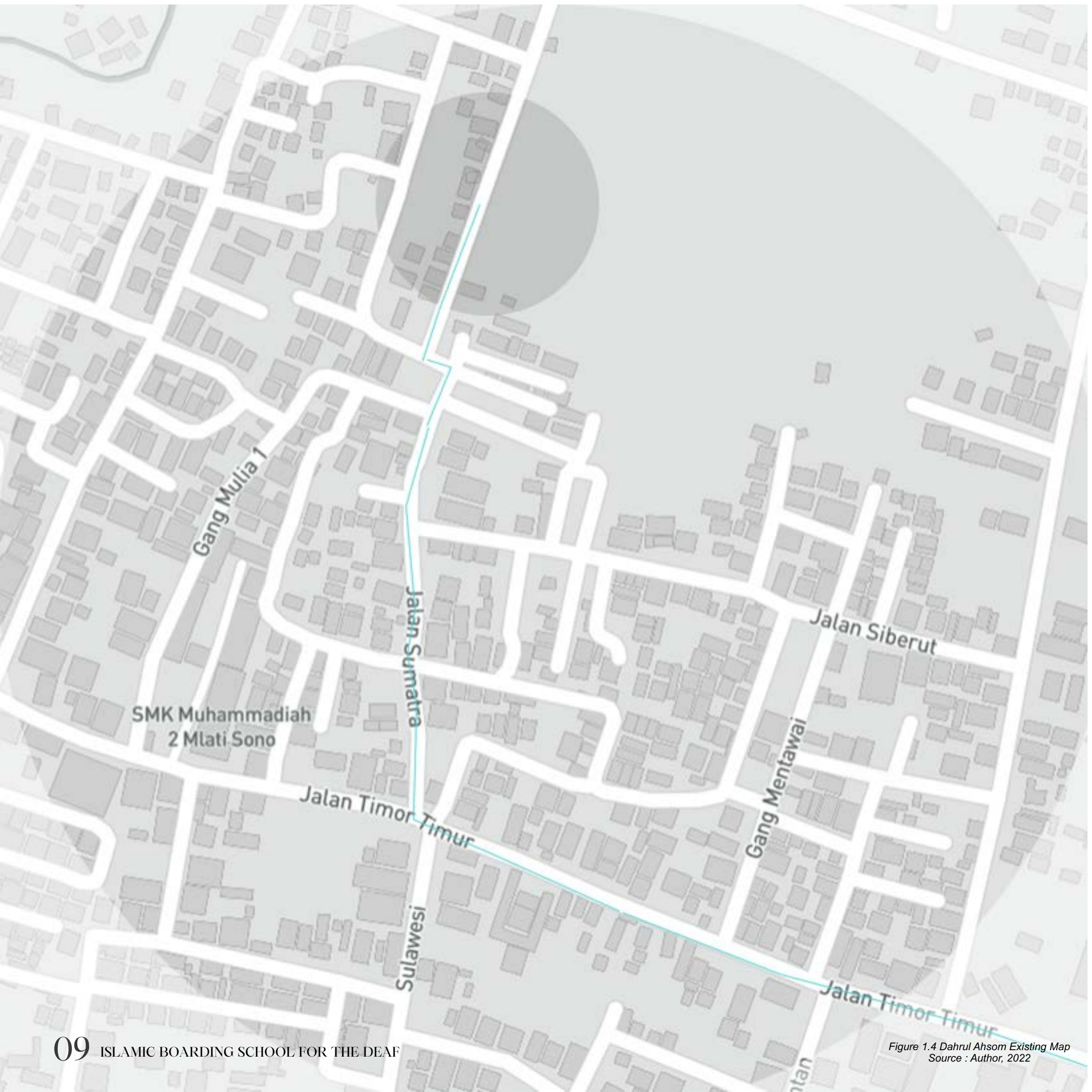
Dahrul Ashom Islamic Boarding School for The Deaf was established in September 2019 on Yogyakarta, Indonesia. This School is a formal learning forum specifically for the deaf in learning Islam and Qurqan. This School that found by Ustad Abul Kahfi only have 780m2 total area of the building recently. The lack of classrooms, minimum natural lighting, also not proper as a school. As time went on Darul Ahsom student have increased. The new building was urgency needed which was certainly bigger than the previous one and improving the proper facilities and requirements.

Dahrul Ashom Boarding School Foundation has a big responsibility for the successful education of children with special needs, and that responsibility rests with the educators. Teachers other than educating also play a role and help grow and develop their students. Apart from that, there are some things that you should also pay attention to by teachers in educating, namely patience and good mental health good at work. There are steps used in learning tahfidz among others:

1. *Tallaqi* or face to face learning, where the teacher actively invites students to communicate frequently perhaps by introducing verses in the Qur'an. One day one verses.
2. *Halaqah* or gather communication learning, where the students sitting circular and learning Al quran together.



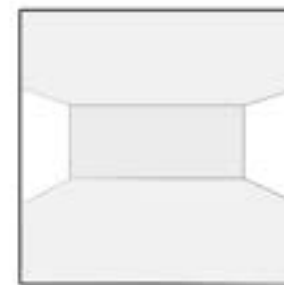
Figure 1.3 Dahrul Ahsom Students
Surce : Pillar.ID



Located in the middle of Kayen village, Darul Ahsom has buildings that spread out in the middle of the crowd of residents' houses. With a total of 66 male students and 40 female students, they have 5 buildings with two houses used as dormitories and 3 houses as learning facilities. The function of spaces are not fixed because of land limitations. So, they need to move to bigger buildings. One and another function is usually held in the same room. Sometimes the joglo building is used as a tahfidz study room and a place to learn martial arts. That mix-function makes the room function ineffective.

Classroom itself located at joglo which has very big opening at the front. To make it private, they put fences to block the opening. But sometimes, its ineffective for the lighting.

The location of the building next to people's houses and right on the village road causes a lot of vehicles to pass by. The santri do not have a safe space for them other than having to try to get used to feeling anxious in looking around. The Timor-timor road is a connecting road between Jalan Sumatra and Jalan Kaliurang, through the Timor-timor road access to Darul Ahsom can be achieved. Darul Ahsom faces directly to Jalan Sumatra with a fairly wide view of the rice fields. Behind Daaraul Ahsom is the house of residents who are generally lower middle class people. The picture beside is a brief illustration of the problems faced by Pondok Dahrul Ahsom at this time.



Too narrow space



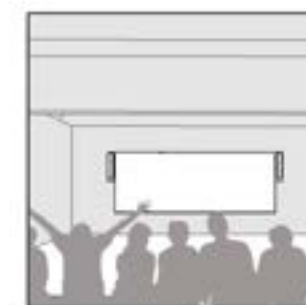
Lack of safety for deaf students



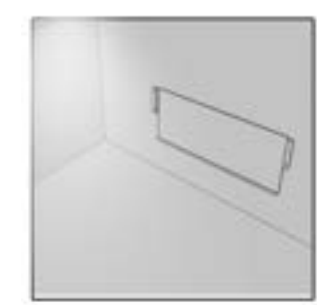
Visual Blocking



Weak boundaries between students and students



Classrooms are too common



Minimal lighting

Figure 1.5 Schematic Drawing of Insuffience Things in Darul Ahsom Existing
Source : Author, 2022

DARUL AHSOM EXISTING BUILDING DOCUMENTATION



Figure 1.6 Dahrul/Ahsom Existing Photos
Souce : Author, 2022



Images of Kiai Abul Kahfi (Founder Darul Ahsom)

TITAH PAK KIAI

Based on Interview, 13 May 2022

- Darul Ahsom have two kind of mosque that has different location and place. The first one Campuss Mosque, located at the boarding house area and should be accessed by only students and teachers. The second one, Darul Ahsom Mosque that function as common pray space for everyone.
- Place for play for the woman located at multifunctional Hall. This is not formally like mosque, because in Islam woman are not obligatory to pray jamaah (together).
- The bedroom more likely like bunker, which the place should have barrier free. Its for deaf safety and for musyrif/musyrfah supervise the student behavior.
- The campuss mosque can be used also for santri (female and male) in special moments, but mostly used for male.
- The mosque shoul inquired of 300 people or more.

Scope and Regulation

SCOPE AND DESIGN LIMITATION

A concept of “Deaf Aesthetic” known as Deafspace has already have been developed. That means a new voice in the discourse of universal design by exploring experience surrounding Architecture and focused on Sense of Visibility. Under this concept, Deafspace Design Guidelines have been developed. The guidelines touch on five board categories which are Light and Colour, Sensory reach, Space and Proximity, Mobility, and Accoustics (Architect Hansel Bauman, 2005).

Deafspace Design Guidelines use human body space as strating point and define the best proximics. In this research we have only focus on the line of visibility range. Which the accoustics not included on the ideas.

This idea used some elements such as texture, study of lighting, and color contrast. Deafspace also attempts to address sensory conflicts, for instance using texture and pattern to improve predictability. Psychology dictionary has been defined sensory conflict as the ailment of motion in which passive movement makes a mismacth between information relating to orientation and movement supplied by the visual and vestibular system (Oxford).

A space is a creation formed out by our desires to feeling comfort, safe and get inspirations (Charlenes A. Johson, 2014). The Islam Boarding School for the Deaf has expected encounter space and set tone reacting to the space itself and still represent of Dahrul Ahsom Islamic principles (Syariat Islam)

MASS PLANING STANDARD

Zoning Regulations

- a. Peletakan bangunan mempertimbangkan hirarki masing-masing ruang, meliputi zona publik, privat, semi publik.
- b. Lingkungan sekolah memiliki pintu gerbang utama yang dapat dilalui kendaraan dan terhubung ke ruang parkir.
- c. Kegiatan yang berhubungan ditempatkan dalam ruang ruang berdekatan yang dihubungkan dengan koridor.
- d. Gedung-gedung ditempatkan untuk membentuk ruang luar yang bermanfaat untuk upacara.

Room Regulation : ‘

- a. Indoor lighting as needed can be met through natural and artificial lighting.
- b. Air ventilation must be able to meet the oxygen needs of users and reduce room temperature.
- c. Oral communication in the room must be able to take place naturally without being disturbed by noise.

Design Method

- **Primary data** collection is the method to collect the data from the first person as the data from the first person as the source. Pak Kiai Abu Kahfi as the chairman of the Pondok Darul Ashom. Data of the last building design by the architect.
- **Secondary data** help to obtaining some information and data from journal, book, website, and other relevant literature sources. From the obtained data such as bio physic condition, geological data, and natural wealth and source of Bunder Forest, provided data used to planning the criteria of design that related with the physical context and surrounding environment. Besides, to learn about thematic review.
- **The field observation** was conducted to match the data obtained by directly come to the site and observing what are served in site.

Problem Formulation

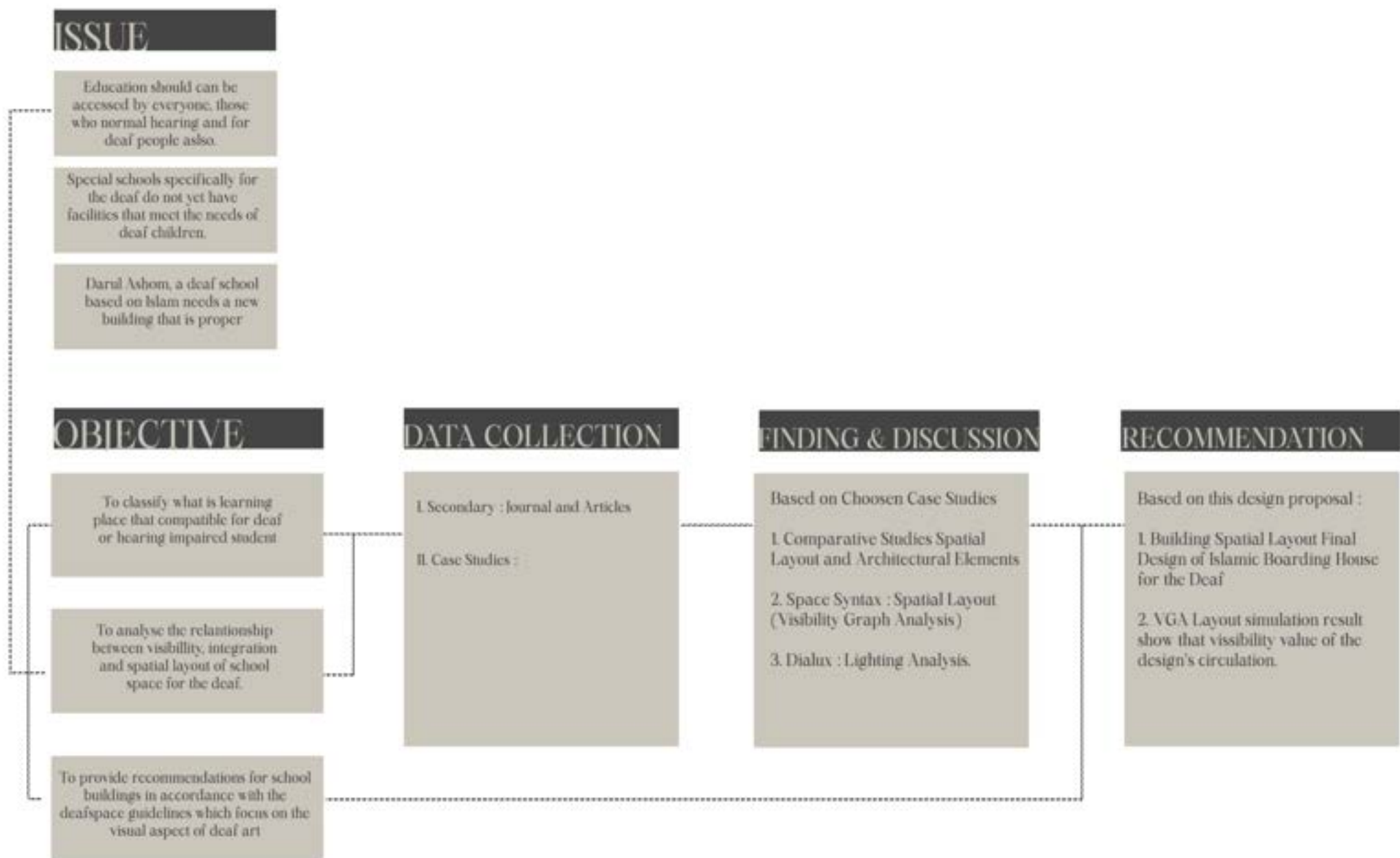
- How can architecture and its elements meet all the needs of the deaf in a boarding school building?
- What is the most suitable role of visual access in supporting learning from the Pondok Dahrul Ashom curriculum?
- Bagaimana cara mendesain rumah atau deaf islamic boarding becoming a respite, a space they can feel safe and at ease?

Research Methodology

In order to improve understanding at the spatial layout of boarding school for the deaf students. The literature review required continuous and extensive work during this whole study. This is do not only by reading and studying published articles, but also by interviewing Darul Ahsom's head, Kiai Abu Kahfi.

The case study will then be simulated onto Visibility Graph Analysis (VGA). Simulation is to identify that visibility test of the spatial layout with deaf friendly concept. By performing VGA simulations with few of case studies, the behavior of the simulated spaces was able to be compared and analysis.

Research Framework



Origanality & Novelty

Title Description	Concept	Difference
Deaf space and the visual world—buildings that speak: An elementary school for the deaf. (Karina A. Tsymbal, 2010)	The concept is develops an exemplary design for an elementary school for both hearing and deaf children, located in Rockville, Montgomery County, Maryland. It has been guided primarily by a set of logical and often intuitive Deaf Space principles, as well as insights gained by an exploration of the unique	Different building typology and different function. This building is dedicated for living also, and based on islamic principles.
Pusat Komunitas Tunarungu: Mata yang Mendengar. (nthia Sofie Devansari, dan Murni Rachmawati, 2017).	The Deaf Community Center is expected to be a forum for the deaf in developing their interests and talents, as well as a forum for exhibiting and showing their abilities and talents to the wider community. The DeafSpace approach as well as the "Hearing Eyes" concept is applied in this design object	Different building function, different typology.
Sekolah Visu Centric : Sekolah Bagi Penyandang Tuli. (Wahyu Adi Sanjaya, 2018).	This journal provide how to build an environment base on sensory experience from people who did not hear. By placing visual accessibility as the main framework, the idea of visu centric school	Different building typology and different approaches.

02

SITE CONTEXT

*Preliminary overview of analytical data and
regulation based on site contextual.*

Playen, Yogyakarta
Site Introduction
Site Data
Site Climate
Site and Neighborhood
Documentation
Site Problem Issue

SITE AND CONTEXT

Playen, Yogyakarta



Figure 2.1 Playen District Map (left) Villages in Playen Map (right)
Source : Author, 2022

Geographically, Playen subdistrict is in the west of Gunungkidul Regency. The Subdistrict of Playen is surrounded by the administrative areas of Patuk and Gedangsari subdistricts on the north side then Wonosari Subdistrict on the east side. Meanwhile, the southern region is bordered by Paliyan and Panggang Subdistrict. The western region is bordered by Bantul Regency. Playen subdistrict has an area of 105.26 km² or 7.09 percent of the total land area of Gunungkidul Regency, and it's the second largest administrative area of the 18 subdistricts in Gunungkidul.

Playen Subdistrict is traversed by Jalan Negara along about 8.7 km which connects 3 villages, namely Gading, Bandung, and Logandeng. The area chosen located at Playen in the Gading Village. It's not so far with Lapangan Udara Gading (Air Field Gading) with the range about 2.3 km. The geographical slope of Gading itself has a fairly sloping expanse of land. Rivers that pass through Gading village include the Oya River, and the Wanagama Forest protected forest.

Playen, Yogyakarta



Figure 2.2 Measurement of Site Location
Source : Google Map

The site was chosen based on *Waqf* land from Mr Agus to the Darul Ahhsom Foundation. The given site has an area of 6000m² with the form of the entrance site behind Pak Herman's house. Pak Herman explained to us that he was very happy with the construction of the Deaf Islamic Boarding School behind his house. The right and left sides are empty areas of former rice fields which are now filled with shrubs and teak trees. In front of the east direction of the land is an empty house for sale. The location of the site is of course far from urban areas, but this is not a problem because Darul Ahsom's basic facilities will be available in the Pondok area, so that the needs of Santri will be guaranteed. The entrance to the site area is a small village road with a width of +/- 5000 meters. The area is an area that is very far from noise.

- The site survey has water peatland, partially overrounded with rice and particaly hard rock and lots of trees.
- Theres 12 Jati trees and
- 8 Sono Keling Trees.
- Total Area = + 6000m²

SITE AND CONTEXT DATA



Figure 2.3 Schematic of Site and Contextual Data
Source : Author, 2022

PUBLIC TRANSPORTATION

Public transportation from the direction of Jogja City to Jalan Karang Mojo Alternative uses the Trans Jogja bus with prices ranging from Rp. 3,500, 00. The journey from Jogja City is approximately 1 hour 20 minutes. However, there is no public transportation from Jalan Jogja-Wonosari to Alternative Karangmojo. Some online motorcycle taxis may be an alternative.

Bus Type (Jogja-Parangtitis) : 1A, 2A, 2B, 4B
Source : Moovit.com

LANDMARK AND PLACES

- Bunder Forest Park: Forest Conservation Area, local tree preservation in TAHURA Bunder. The definition of a local tree in this context is a tree-habitual plant species that is rarely or not found in current global use.
 - Air Field Gading: an airport located in the Gunung Kidul area, Special Region of Yogyakarta, Indonesia. Has a runway length of 900 m (meters) with a grass surface with a runway width of 30 m (meters).
- In addition, the site area is not far from Pertamina's Gas and Oil Station and Nur Rohmah Hospital.

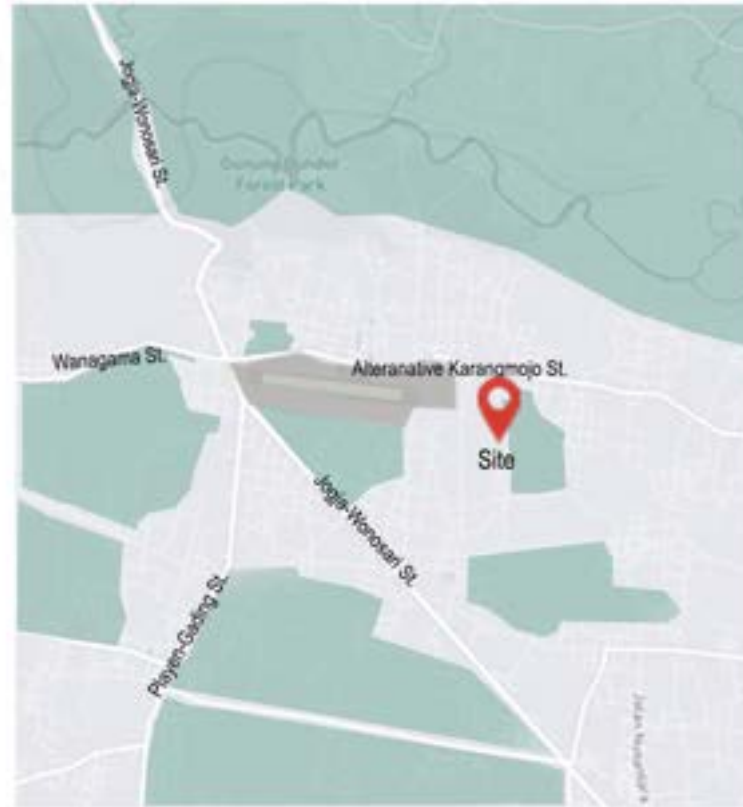


Figure 2.4 Schematic of Site and Contextual Data
Source : Author, 2022

LANDMARK AND PLACES (ALT. KARANGMOJO ST.)

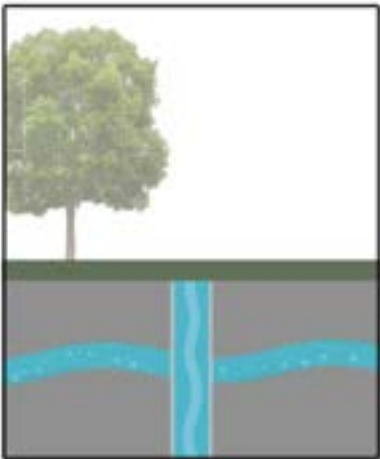
The journey to enter the site area from Jogja-Wonosari St. turn towards Alternative Karangmojo St. As the opening landmark for the transition of the two roads, we will be greeted by Gading Police Station. Then we met the crossroad at the Karangmojo while met the Statue of Jenderal Sudirman. It is a sign that the next road turns towards to the the site.

OPEN GREEN AREA

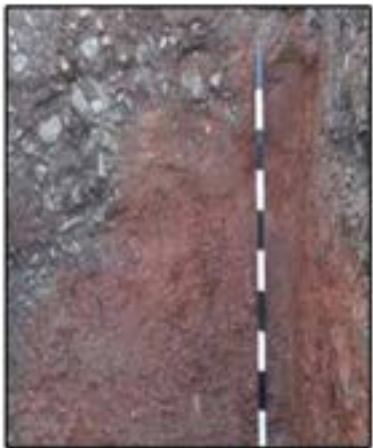
Green open space is a large area in which there is a place to grow plants, both those that grow naturally and those that are intentionally planted. The Playen area is an area with a lot of green open space, plus TAHURA which is a conservation forest. This area is quite far from the bustle of Wonosari Regency which is actually not as crowded as the city of Jogja.

Based on BMKG data dated May 18, 2020, the air quality in Yogyakarta is good quality. Even without AC the air quality is still good with note there is no pollution from external air. In this building, a poultry cage which is planned to be built in the cottage complex which is would be an external pollution. The cage will be placed at the very end of the back. To prevent the spread of the odor, the distance about 10 meters or more between the house and the cage. Then the wind spread from the northeast to the northwest so that the chicken coop will be located behind the site and in the northwest direction.

The site soil is ex-rice field which has a moist structure that must be dried before the building is erected. The location of the site includ of Wonosari middle zone, with the caracteristic of soil type dominated by the association of red mediterranean and black grumosol, the based material of limestone. So that during the long dry season, water particles are still able to survive. Its tells the water sources from the ground water. This groundwater height 60-120m above the ground.



Groundwater located on 60-120 m above the ground



Red Mediterranean Black Grummosol

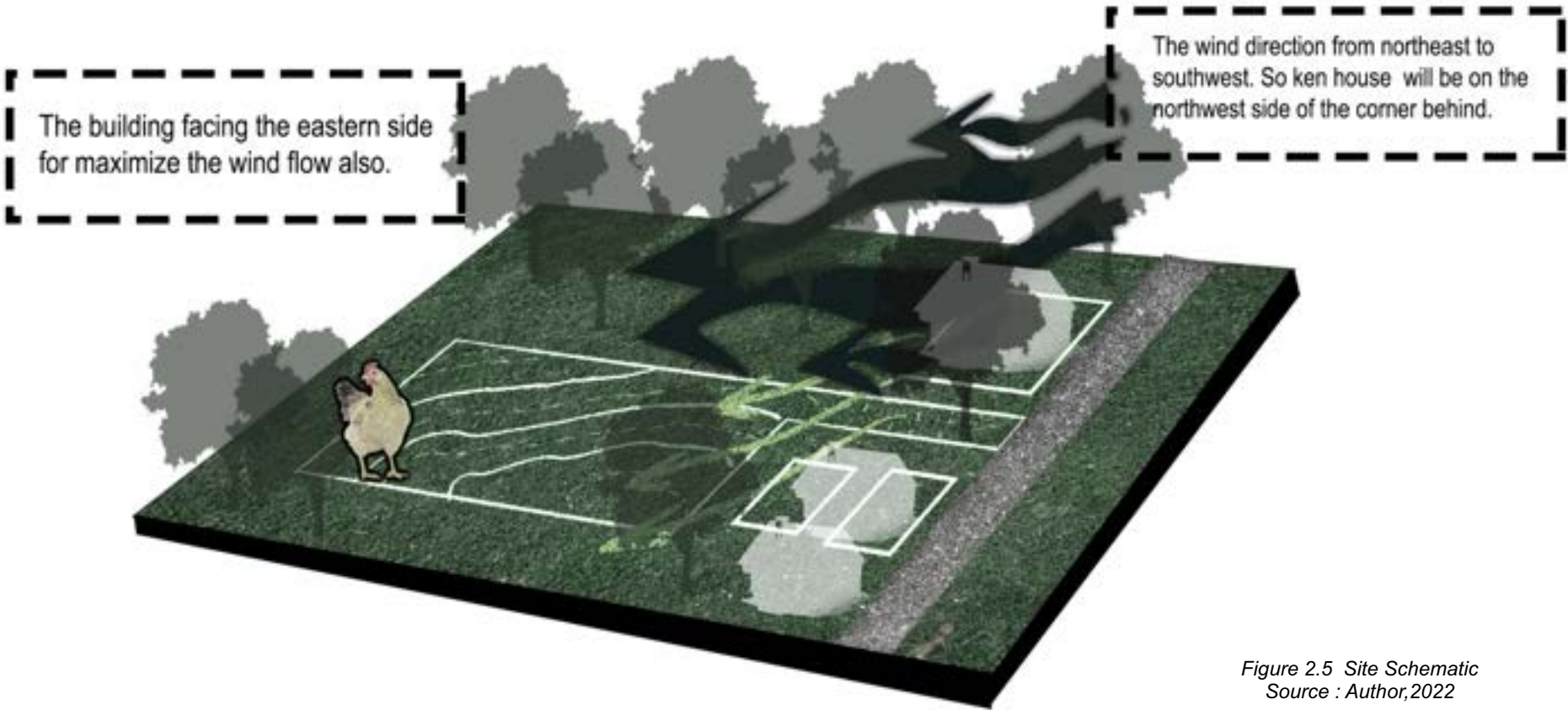
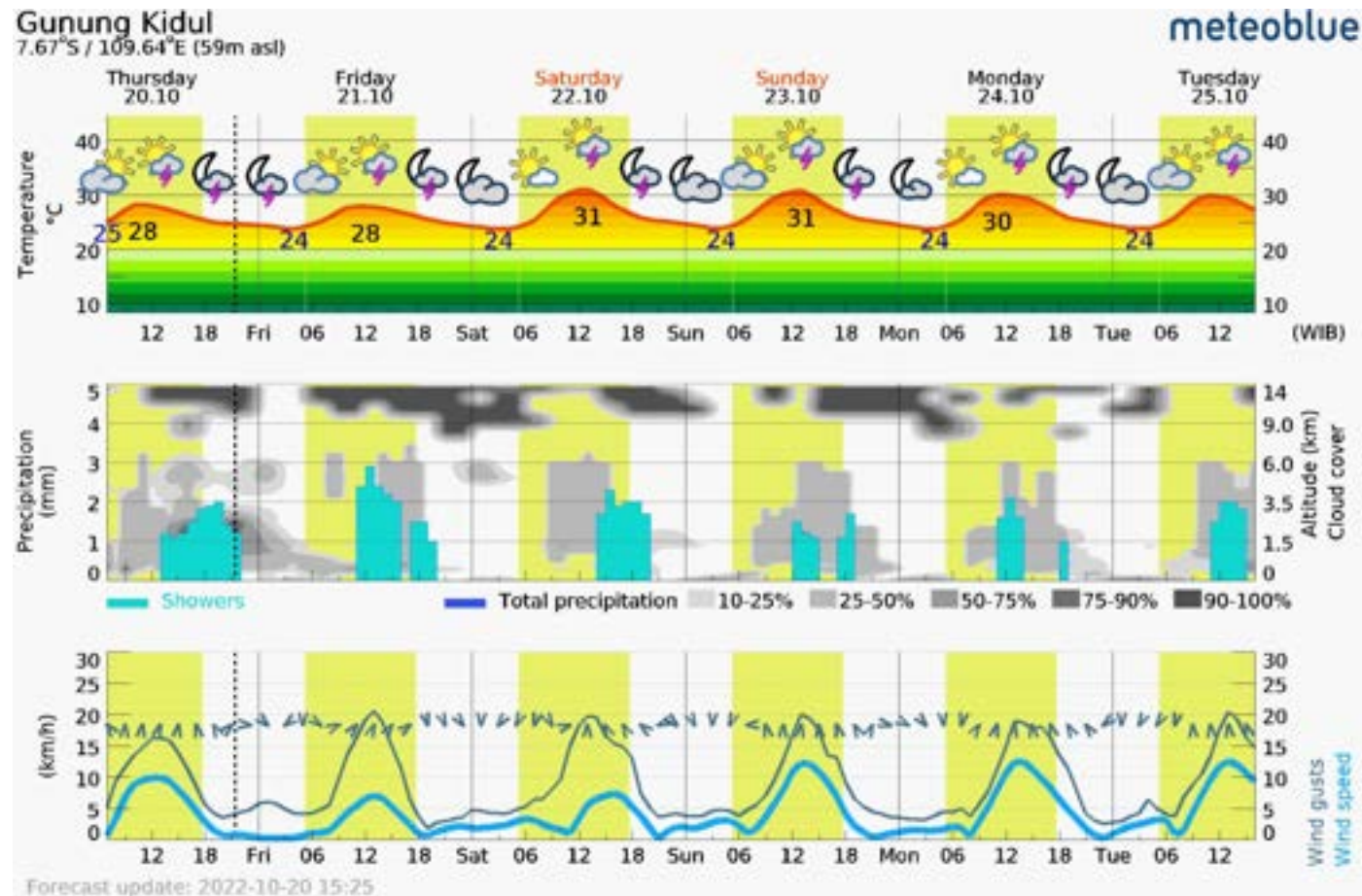


Figure 2.5 Site Schematic
Source : Author,2022



In general, Gunungkidul district has 3 months without rain, from June to August and an average of 109 rainy days and 2155.98 mm of rainfall. the number of rainy days can affect the number of sunny days inGunungkidul Regency, from this average rainy day, it can be seen that Gunungkidul RegencySouth has 256 days without rain or 26 sunny days.

These diagrams show hourly data for Gunung Kidul for 3 days. Yellow areas indicate daylight. The 2m dewpoint temperature indicates how much water is in the air at ground level, from where potential thermals would start. A larger difference between temperature and dewpoint means less humidity and thus a higher cloud base. .

Precipitation: Total precipitation (rain, convective and snow) in millimeter rain gauge. As it takes a lot of heat to evaporate water, wet ground heats slower and is thus less favorable for thermals than dry ground. Also, thermals start earlier in dry conditions, when no rainfall happened before. 10m wind and 80m wind: Wind speeds in 10 and 80 meters above ground in kilometers per hour. Thermals develop under calm conditions or with light, variable wind. However, with 10 to 20 km/h wind, the thermals tend to be better organized. Stronger winds generally means also more wind above, which could produce wind shear, destroying the thermals. Look at the wind shear diagram

THE SELECTED LAND HAS BEEN FREE OF:

- Water Pollution, sin accordance with PP RI No. 20 of 1990 Control of Water Pollution.Noise, in accordance with the Ministry of Environment Decree No. 02/MEN KLH/1988 concerning Guidelines for Stipulating Environmental Quality Standards.
- Land in accordance with the location designation regulated in the Regional Regulation on Regency/City Spatial Planning or other more detailed and binding plans, and obtaining a land use permit from the local Regional Government.
- The land has the status of land rights, and/or has a utilization permit from the holder of the land rights in accordance with the prevailing laws and regulations for a minimum period of 20 years.

SITE AND NEIGHBOR



GBC
Bart



EXISTING IMAGES, FEATURES, INFRASTRUCTURES



Figure 2.6 Site condition, Pak Herman's House
Source : Author, 2022

This image show us about the view accroos the site. The entrance to the site area for the cottage has 6 meter wide road with views of residentstial and garden as the picture below. The upper images one is locate at the point 1. The right one at the pont 2 and the left one at the point 3.

The following is the site survey documentations. The top left image is the condition of the trees that reach approximately 4 meters-5 meters in height. The bottom left image is the condition of the road to the site which is a thicket and the soil tends to be wet. The right picture is an empty house in the front area of the site south of Pak Herman's house.

BUILDING CODES REGULATION

The location of the boundary line of the fence and the boundary line of the building to the road, if not specified otherwise, is as follows:

- a. The boundary line of the fence to the secondary collector road is 10.5 m from the road, while the location of the boundary line for the building is 21 m from the road.

Green Coverage Ratio

KDH yang belum diatur dalam RTRW/RDTRK/RTBL sebagaimana dimaksud pada ayat (2), untuk bangunan publik ditentukan paling sedikit 20% (dua puluh persen), sedangkan untuk bangunan privat ditentukan paling sedikit 15% (lima belas persen).

Building Height

- a. Residential area with a maximum height of 3 floors or 18 meters.
- b. Commercial area with a maximum height of 8 floors or 40 meters.
- c. Mixed area with a maximum height of 3 floors or 18 meters.

Building & Floor Coverage Ratio

Building density is regulated by determining the Basic Building Coefficient (KDB) and Building Floor Coefficient (KLB) as follows:

- a. Residential areas have low to medium density, namely KDB: 40%, KLB: 1 to KDB: 60%, KLB: 1.5.

SETBACK

10 meter

KDH

15%

BCR + FCR

60%+1,5

Building Height

18 meter

1

STRENGTH

1. The land is on relatively flat land, so it is easy to level.
2. Sunlight 12 hours per day so that it is sufficient as natural lighting

2

WEAKNESS

1. The site is located in an area that is quite far from urban areas
2. The site is located in a rural area with minimal light
3. Soil is a former wet and watery rice field area.
4. The road to the site is quite small

3

OPPORTUNITY

- Site climate temperature is pleasant, so architect not really need air conditioner.
- Because the site soil is grummosol soil, this gives the advantage that the site will avoid drying out under normal climatic conditions.

4

THREAT

- The lack of artificial lighting so it needs proper lighting design so that does not happen blackout.
- High rainfall for agricultural land areas-rides can cause puddles and soil instability

03

STUDY AND ANALYSIS

An Overview of literature and theoretical study.

Analysis based on design requirement:

Precedent Study

Table of Design

Behaviour Study of School Student

Analysis of User Activity

Analysis of Room Need

Analysis based on Area Purpose

Room Layout Arrangement

Special Room Treatment Concept

Conceptual Study :

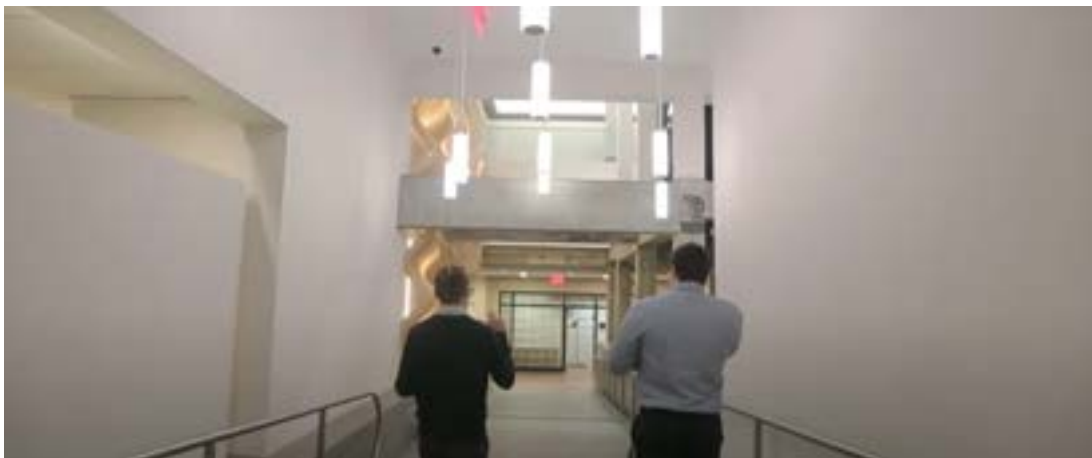
- Non-Distraction Classroom
- Visual Friendly Building and Facade
- Visual Barrier Landscape
- Deaf Friendly Mosque
- Visual Alarm for Emergency

GALLAUDET UNIVERSITY

Precedent Study



Figure 3.1 Gallaudet University
Source : Ltlatchitects.com



We all agree that Gallaudet University is designing in many years by years to get the best properly deaf space. From Gallaudet University YouTube videos, we are invited to walk along how the campus provides a space that focuses on visual aspects for deaf students. The picture above is an example of a room with a visual difference in the color range of the furniture. This helps the eye to easily distinguish items. The image below is a circulation path that is sufficient for two people in a position to communicate. The lighting above is lined up following the circulation of the road, so the lighting remains safe while in the corridor.

DeafSpace isn't about just replacing the auditory with the visual—it's about creating a rich multi-sensory environment that eases mobility, expresses identity, and enhances wellbeing. The DeafSpace philosophy rests on five basic principles. The first is space and proximity. Deaf individuals often initiate communication with eye contact and need to maintain it over the course of a conversation. Facial expressions are important in ASL. So are body movements; to be able to sign comfortably, a person needs adequate space—more than is typically required for someone engaged in spoken conversation [Gallaudet University, 2016]. Bunches of student will normally shape circles or curves to incorporate everybody. They dodge long, rectangular tables, which block sees as the principles of eye proximity.

GLASIR TORSHAVN COLLEGE



Figure 3.2 Glasir Torshavn College
Source : Archdaily

This school is shaped by the internal needs of the students and teachers, Glasir is conceived as a stack of five individual levels that wrap around a central courtyard: one for each of the three institutions, one for food and faculty, and one for physical exercise and gatherings. The building is organized like a vortex, with each level opening up and the top levels radiating 30m / 100ft out towards the mountainous landscape. This made the visibility are easier from the above or the below.

Deyang School for Deaf & Intellectually Disabled

Precedent Study



Project Name : Deyang School for Deaf and Intellectually Disabled
Architect : China Southwest Architectural Design and Research Institute Corp. Ltd
Location : Deyang, China
Complete Year : 2012

Deyang School for Deaf & Intellectually Disabled Children is a charitable educational institution, recruiting children with talking and hearing disabilities or mentally retarded pupils. The school includes teaching, sports and accommodation facilities. 'Home' is as the prototype of the design, expressing the special concerns for the children on campus. By dividing the campus into small-scaled sloped-roof different-sized buildings around a central courtyard, they form a miniature village. The rooms in each building are oriented towards the atrium that following the relationship of 'Rooms'-atrium'-courtyard' to create multi-level interactions between private and public spaces, which not only respect the pupils mental needs but also their activity routines.

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Figure 2.3 Deyang School Corridor
Source : Archdaily



The building shape encircle one point are the most effective forms of creating an environment with good visibility. Roofs that have skylights are a brilliant idea to take advantage of sunlight, the pyramidal shape of the roof reduces heat inside the building. In addition, the circulation area is designed to avoid visual blocking so as to increase visual awareness. Deyang School is a good example of the use of good circulation elements and good use of lighting. However, for implementing skylights such as at Deyang School, it is necessary to pay a little attention to heat transfer, because Indonesia is a country with a tropical climate that tends to be hot.

Auriga Café

Precedent Study



Figure 3.4 Auriga Café Documentation
Source : Author



The interesting thing about the interior design of Auriga Café is how the architect designed the visual connection. Figure A shows the connection between the dining room, basketball room and crossroads which can be highly visibility clear. In addition, the blue accents on the walls of the basketball room seem to provide a very easy-to-recognize visual sign.

Figure (C) shows the visual space through the floor. The gray area indicates a place to eat while the wooden parquette area is a table that only Auriga employees have access to.

Figure (B) shows that the visual sign can go through the concrete block arrangement. This arrangement sends a message to the user indicating that this area is a circulation path in the same direction as the material is lined up.



PRECEDENT OVERVIEW

Samples were selected with particular criteria based on certain theories following the Deaf Guidelines. This was under the consideration that the sample would really serve as the representative of the phenomenon being. (Starus & Corbin, 1990). The concept of circulation from the first precedent, provides lessons about the width of the road, the background color of the circulation, so that the space for communication is wider. The concept of good lighting for deaf students is shown by Deyang School with skylights that help minimize black out when artificial lighting has an error. While the latest precedent study shows that visual concepts are able to provide sufficient information about circulation rate, spatial awareness, and boundary differences in a space.



DESIGN THEME

The design theme concerns of Islamic Deaf School. Through papers and researches, scholars, and architects have begin developing the ideas, parameters, and novelties on deaf space design paradigm to make deaf school that focused on visual aspects. Visual aspects is consist of many parameters that have basic guidelines by Deaf Space Design Guidelines, Gallaudet University. Vision plays a fundamental role in sighted people's daily lives: through sight information about the visible world is collected. The last century has spectatory outspoken critiques of vision, of visual culture, and bias in visual of architecture (Pallasmaa 2005; Latour 1990; Harvey 1989; Zardini 2005).

Bappeda Yogyakarta stated on 2022 a people who hard hearing currently 2.415,00 person, which has increased from 2018 from 1996.00 persons. It stated that a school for the deaf should to be considered for their eligibility and their comfort. The condition of Deaf School nowadays in Yogyakarta itself is very alarming, because the school wasnt designed for the deaf, they just designed for school in general. The building itself is based on the behavioral characteristics of physical environment needed by hearing users not depending what should hearing disability users. The purpose of study is to improve the quality of school that have islam as the religion to level a visual comfort and behavior of hearing disability users in the process of school and praying (in Islamic way).

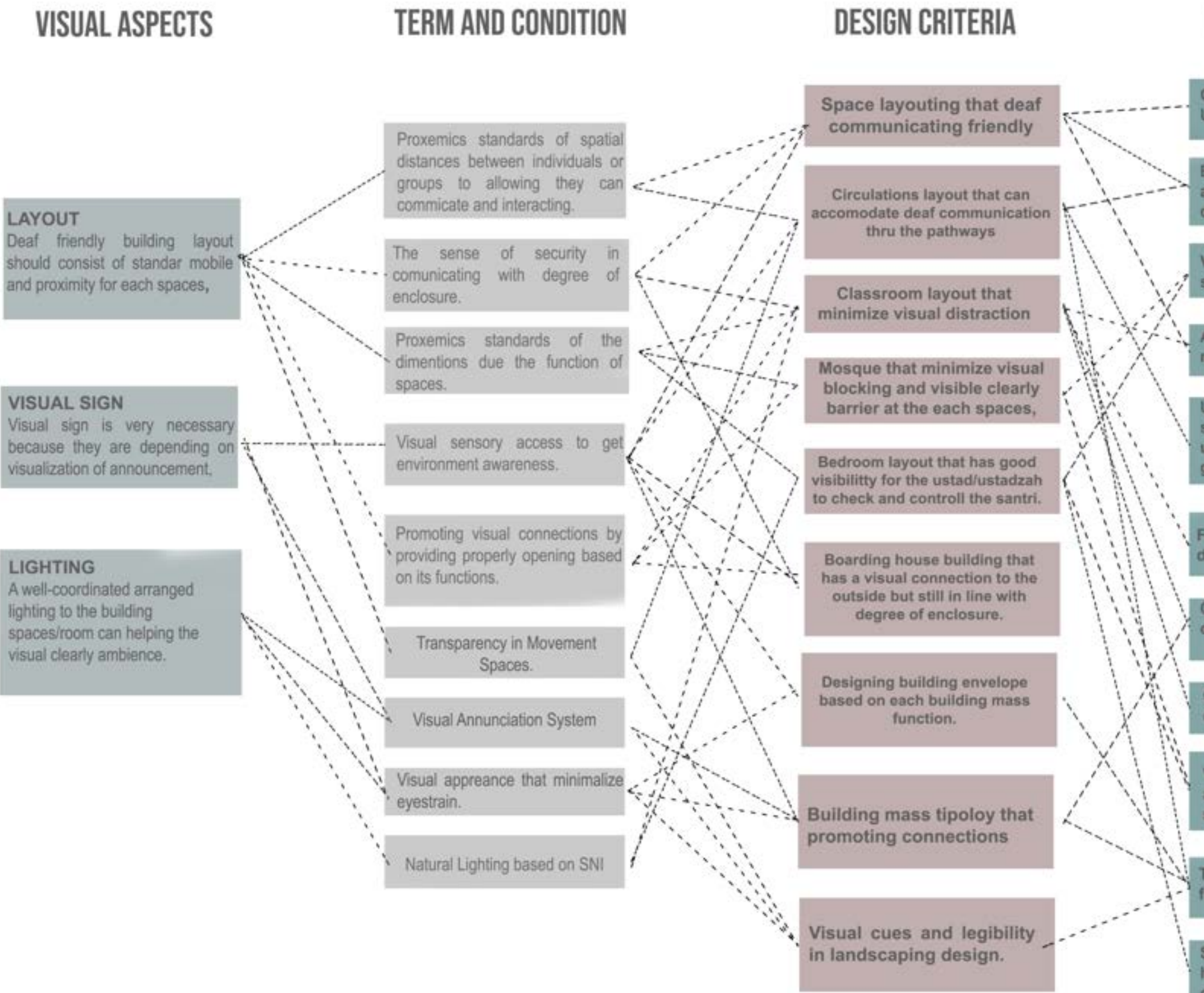
This interesting topic raises some polemics because the Deafspace Guidelines from Gallaudet University are only intended for public schools, then what if it is a religious school that has regulations related to Islamic sharia itself.

In general, the basic formulation:

1. Layout design by considering anthropometric, proxemics, space study.
2. Visual clearly for communication and information
3. Lighting and Color Study

The formulation has a definite goal, namely maximizing the visual aspect through layout design, visual sign, lighting and color.

Table of Design



DESIGN GUIDELINES

Group Setting Arrangement
shaped

eddies as place for stopping
area so they might not
disturb the circulations

Visual reflection for visual
sign surrounding awareness.

Avoid blocking area in
movement spaces

Using color contrast
tintone in space that may
used as individuals/
grouping communicating.

Local point emphasized by
direct lighting

Quality transparent
openings each rooms.

Glazed Entrance for each
floor.

Visual doorbell light fixtures
as alarm/announcing
systems.

Threshold and Vertical Cues
for the circulations

Safe light lux for that not
harmful in each room based
on SNI

CONCEPT

CLASSROOM THAT MINIMIZE
THE NOISE WHEN STUDY

Visual Barrier Landscape
that easier for the Deaf

Visual Friendly Building &
Facade to have spatial
awareness for the deaf

Mosque for the Deaf
Moslem to Pray

Visual Alarm when
Emergency

SCHEMATIC DRAWING

ROOM ARRANGEMENT
AND SITEPLAN

VISUAL FRIENDLY
ENVELOPE

BEDROOM FOR THE
DEAF

CIRCULATION FLOW
EACH ROOM

VISUAL RANGE SOLUTION
FOR THE OPENING

SPACE AND PROCEMITY
IN CIRCULATIONS

DRAWING

SITEPLAN

FLOORPLAN

ELEVATION

SECTION

EXTERIOR

INTERIOR

DETAIL

BEHAVIOR STUDY OF ISLAMIC BOARDING SCHOOL

Literature and Concept Study

1.1 ANALYSIS OF DAILY ACTIVITIES

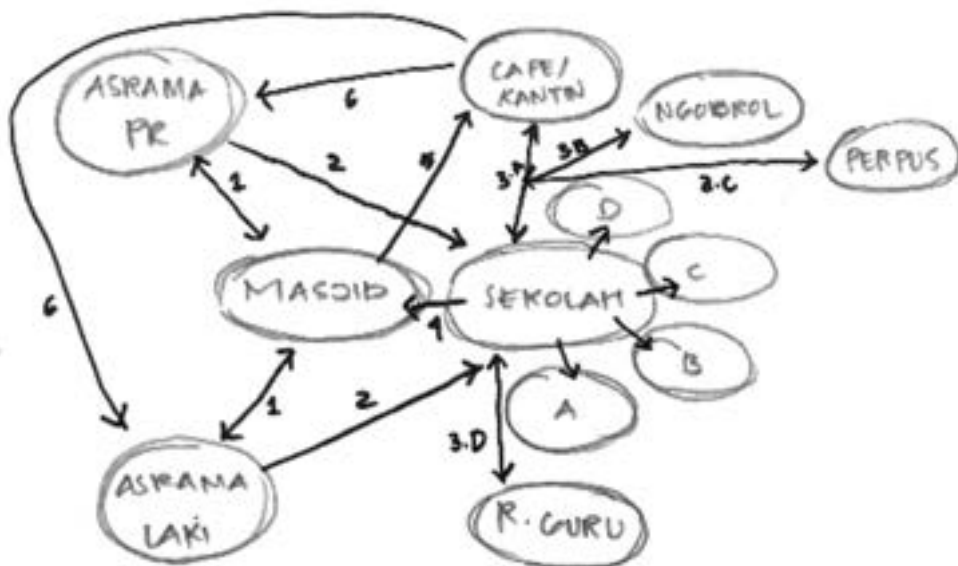
Boarding school have their schedule each day to their santri. This akhwat time schedule show the female students daily activities. Ruang Serbaguna means Multifunction Hall. The school activities began on 3 am - 10 pm (Monday to Saturday). If Sunday, the are no school activities but still doing pray.

AKHWAT		
SCHEDULE	ROOM	ACTIVITIES
TAHAJUD	RUANG SERBAGUNA	03.00-04.00 AM
SHOLAT SUBUH	RUANG SERBAGUNA	04.00-04.30
NGAJI PAGI	RUANG SERBAGUNA	04.30-05.00
BREAKFAST	RUANG SERBAGUNA	05.00-07.00
DUHA, RECITE QURAN	RUANG SERBAGUNA	09.00-10.30
FREE TIME	KAMAR	10.30-11.00
HADIST	RUANG KELAS	11.00-12.00
LUNCH	RUANG SERBAGUNA	12.00-01.00 PM
FREE TIME	KAMAR, BEBAS	01.00-03.00
ASHAR	RUANG SERBAGUNA	03.00-03.30
SCHOOL STUDY	RUANG KELAS	03.00-04.30
FREE TIME	BEBAS	04.30-05.20
MAGHRIB	RUANG SERBAGUNA	05.20-06.00
SCHOOL STUDY	RUANG KELAS	06.00-07.30
ISYA	RUANG SERBAGUNA	07.30-08.00
DINNER	RUANG SERBAGUNA	08.00-08.30
FREE TIME	BEBAS	08.30-10.00
SLEEPING TIME	KAMAR	10.00-03.00

IKHWAN

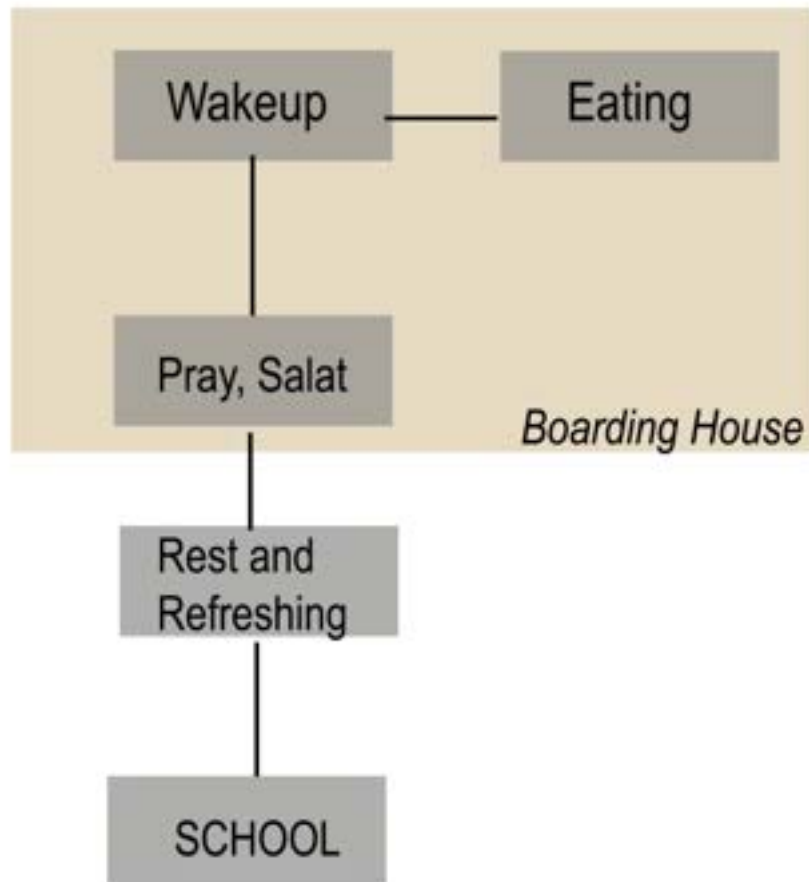
SCHEDULE	ROOM	ACTIVITIES
TAHAJUD	KAMAR	03.00-04.00 AM
SHOLAT SUBUH	MASJID KAMPUS	04.00-04.30
NGAJI PAGI	MASJID KAMPUS	04.30-05.00
BREAKFAST	RUANG MAKAN	05.00-07.00
DUHA, RECITE QURAN	MASJID KAMPUS	09.00-10.30
FREE TIME	BEBAS	10.30-11.00
HADIST	RUANG KELAS	11.00-12.00
LUNCH	RUANG MAKAN	12.00-01.00 PM
FREE TIME	KAMAR, BEBAS	01.00-03.00
ASHAR	MASJID KAMPUS	03.00-03.30
SCHOOL STUDY	RUANG KELAS	03.00-04.30
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MAGHRIB	MASJID KAMPUS	05.20-06.00
SCHOOL STUDY	RUANG KELAS	06.00-07.30
ISYA	MASJID KAMPUS	07.30-08.00
DINNER	RUANG MAKAN	08.00-08.30
FREE TIME	BEBAS	08.30-10.00
SLEEPING TIME	KAMAR	10.00-03.00

SANTRI LIFE CYCLE PROGRAMMING

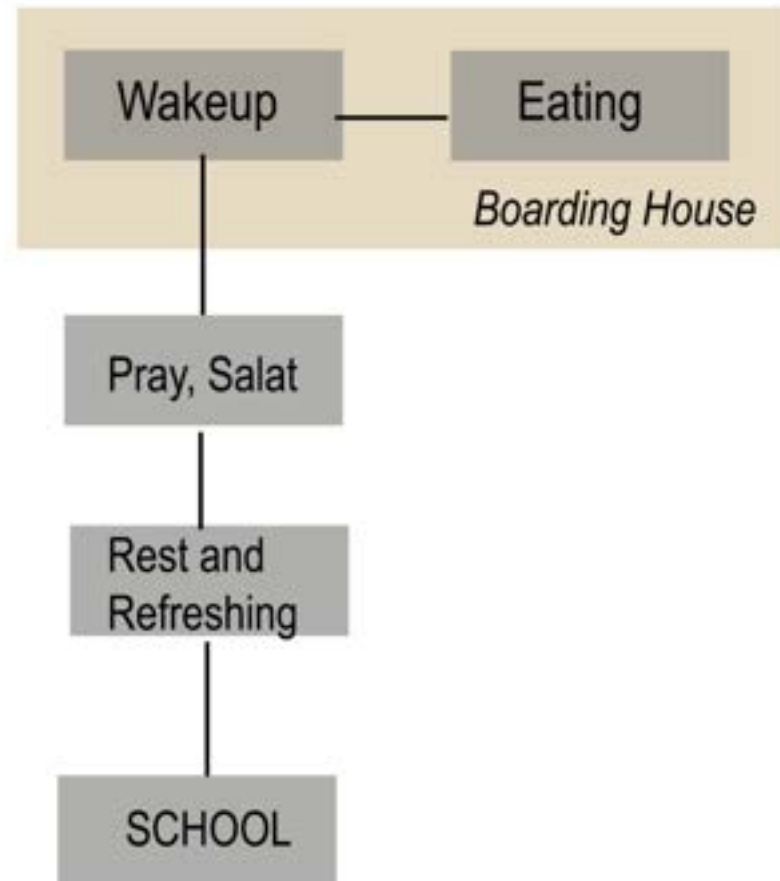


From that table we have this cycle conclusion. Which the place they might going is Boarding House to the Mosque (for male) then classroom and they can take a rest on a garden(a), restroom (b), library space(c), canteen(d)

FEMALE SANTRI

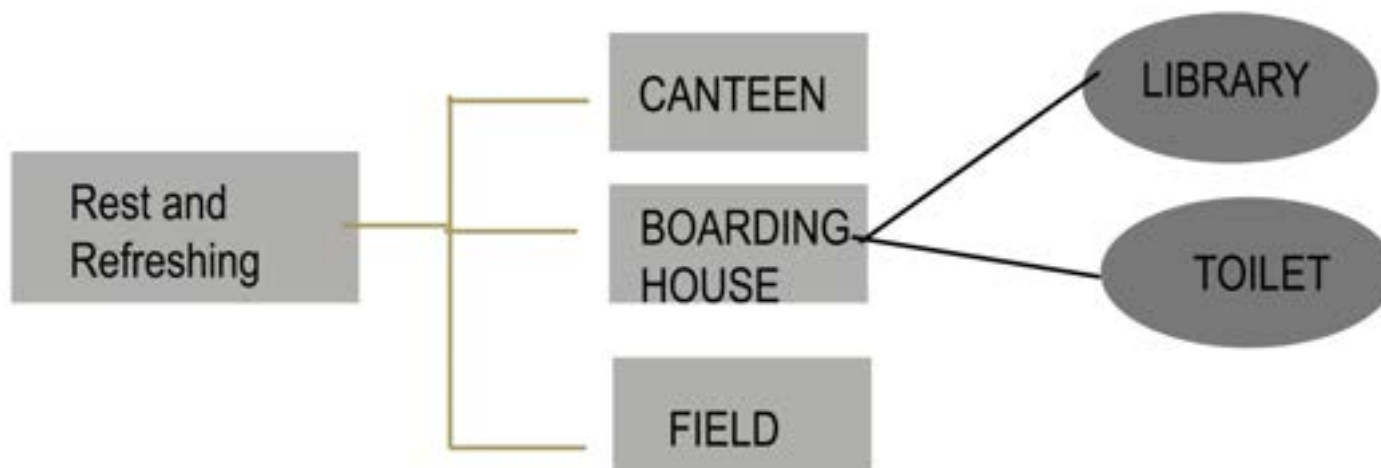


MALE SANTRI



Based on the schedule; The daily schedule of the santri, male and female students have a similar schedule. The only difference is the space they occupy. As explained in the chapter on Pak Kiai's orders, female students pray in the bedroom or multi-function hall, while male students must pray in the mosque.

Below is the flow of free activities (rest) for the students. As you can see in the graph below, rest time would give student many choices to go whenever they want. They can go canteen, boarding house, or field area.

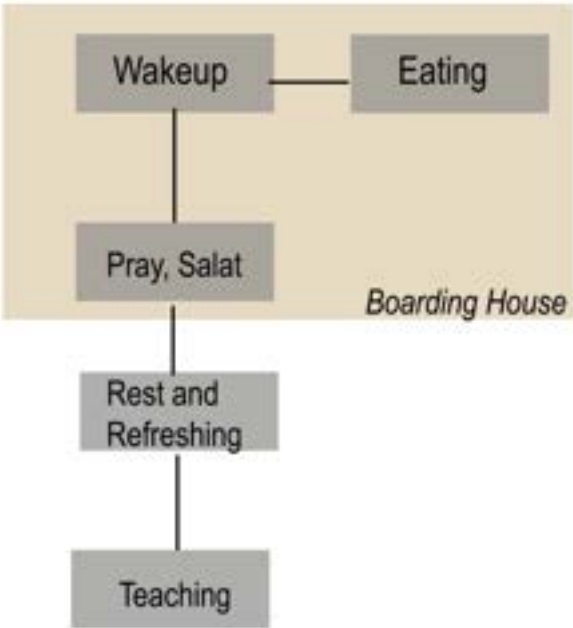


1.2 ANALYSIS OF OTHER USERS

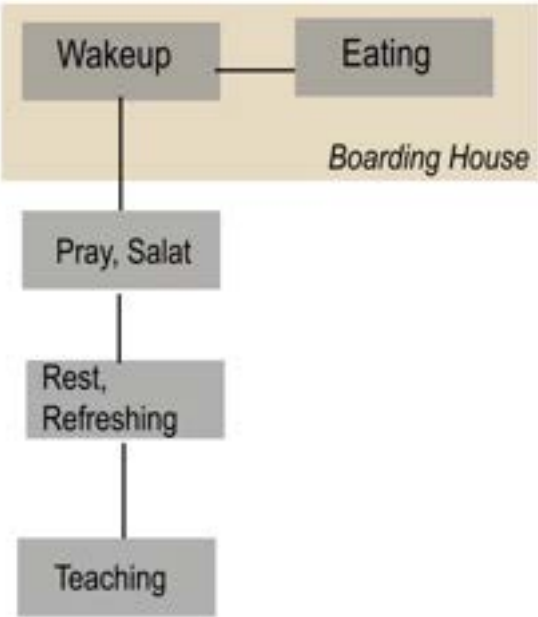
Deaf Boarding School Dahrul Ahsom have 174 total of people who living in it. The 20 person as the a “keeper” for that school. Those keeper can be seen at this table. Which they got their own job in this school. All of the keeper is living in the Deaf Boarding House also.

Number	Pengelola	Total
1	Chief Executive	1
2	Musyrif	7
3	Musyrifah	5
4	Female Santri	45
5	Male Santri	110
6	Cheff	2
7	Cleaning Service	3
8	Security	2

FEMALE TEACHER



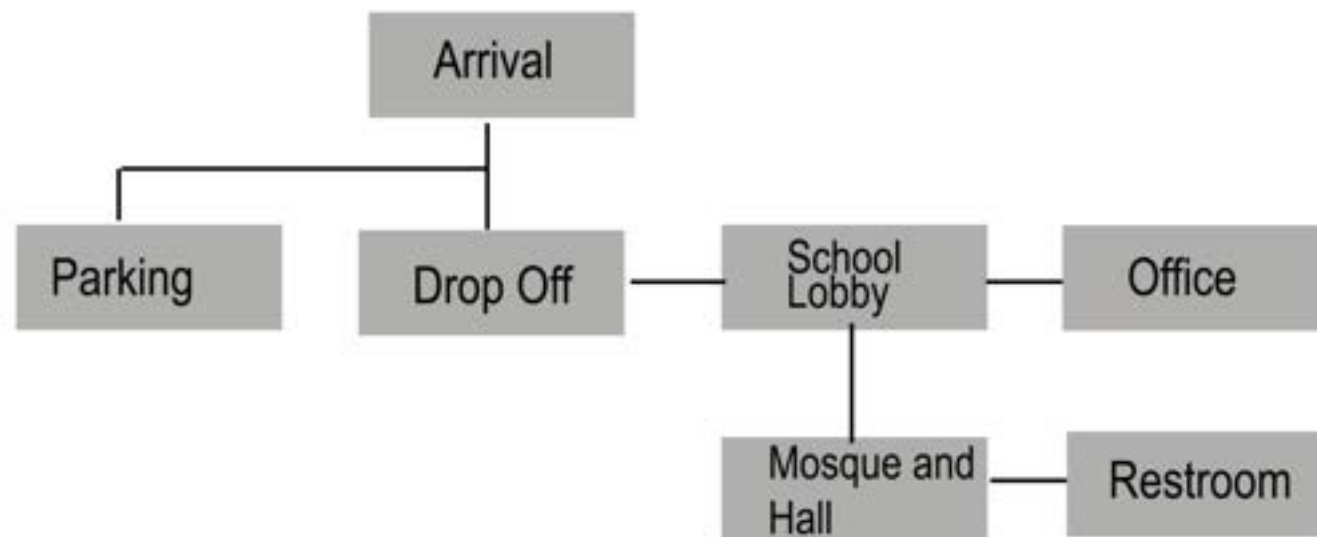
MALE TEACHER



Female teacher (Musyrifah) and Male teacher (Musyrif) also living on the boarding House with the santri. They are have their own office also in school mass building. Musyrif and Musyrifah are a person who arent deaf but can speak in ASL Language.

In other hand, this building also open for anyone (visitor). But they prohibited to going through the Santri's area. Visitor may a parents of them, also can be a guest that want to know about this school. This is the circulation activities map for the public visitor.

VISITOR



Visitor only can access the Mosque. Darul Ahsom Mosque is the public mosque that also can be a hall and ballroom. This mosque can accommodate 200 people. Unlike the Campus Mosque, this mosque is designed for normal people. So, there is adzan sound can be heard from it. The reason why they are prohibited from going inside is because of the rules of the Darul Ahsom. Visitors are not forced to wear hijab, but when you go to the inside of the Boarding House area, they should use hijab. Kiai Abu the principals of the Darul Ahsom also warned the student to not go outside without legal permission. So, the boundaries are very clear but not visible.

1.3 ANALYSIS OF ROOM NEED

The table show the Room need for the Boarding School.

ROOM REQUIRED		
1	LOBBY	A place for welcoming the guest
2	LOCKET AND SECRETARY	A place for financial locket
3	HEAD SCHOOL OFFICE	Room for the Headmaster
4	TEACHER OFFICE (MALE)	Room for the Teacher
5	TEACHER OFFICE (FEMALE)	Room for the Teacher
6	PUBLIC TOILET	Room for toilet
7	DAHRUL AHSOM MOSQUE	For praying and can be ballroom
8	CLASSROOM	For study
9	Canteen, Kitchen	For buying some food
10	BOARDING HOUSE (FEMALE)	House for Female Students, Teacher, and Staffs
11	BOARDING HOUSE (MALE)	House for male Students, Teacher, and Staffs
12	DINING ROOM (MALE)	A place for eating
13	FIELD	Green area space
14	BATHROOM	Room for bathing
15	CAMPUSS MOSQUE	Mosque for the Male
16	ABLUTION	for doing ablution
17	CHICKEN PEN	For harvest
18	MULTIFUNCTION ROOM	A place for pray, hadist learning, and eat for female

1.4 ANALYSIS BASED ON PURPOSE

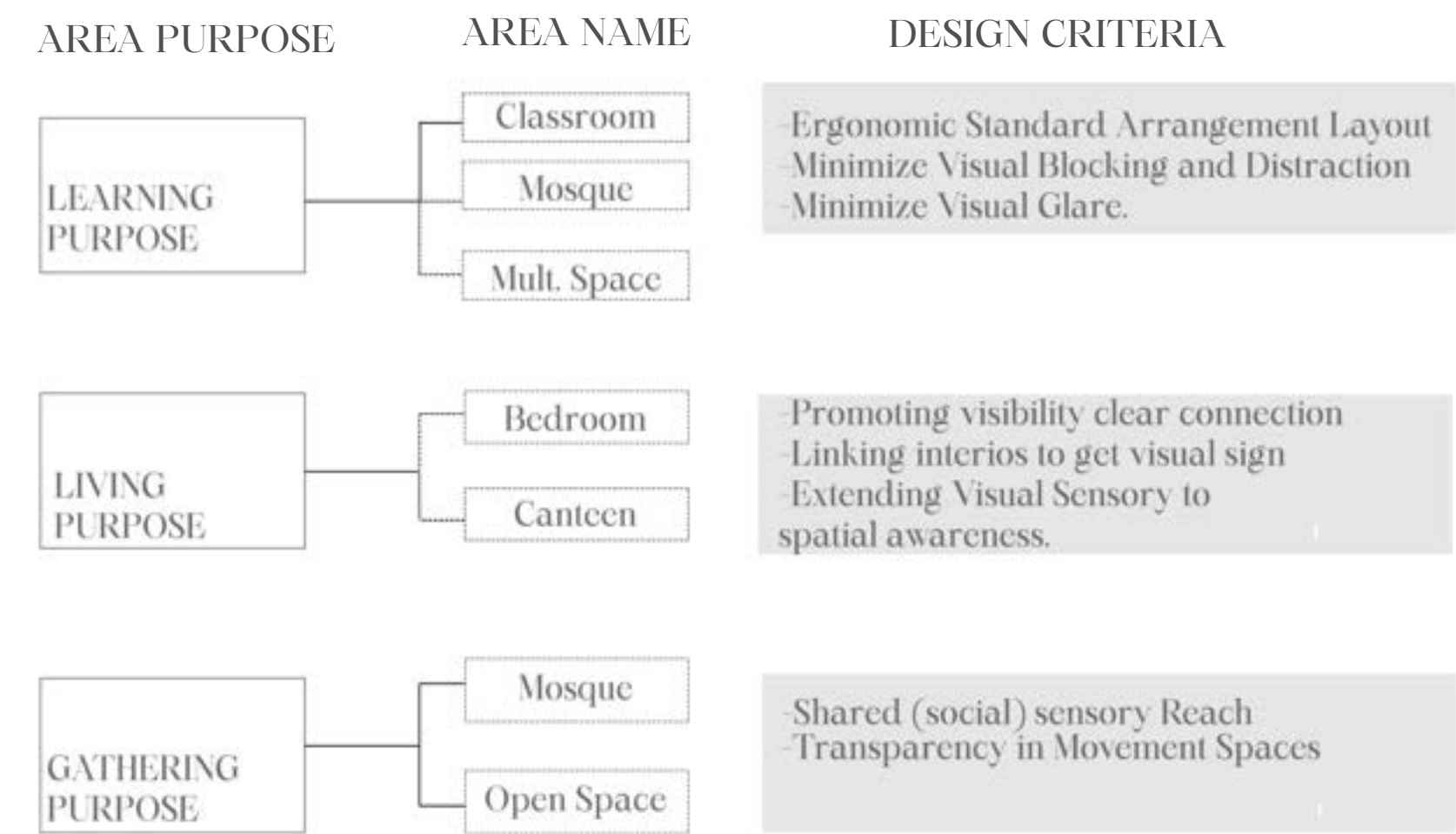
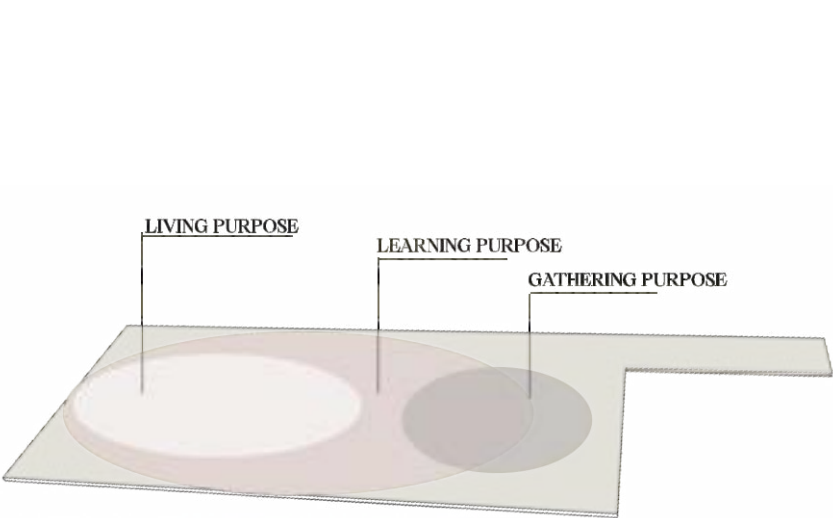


Figure 3.5 Purpose Illustration Diagram
Source : Author,2022

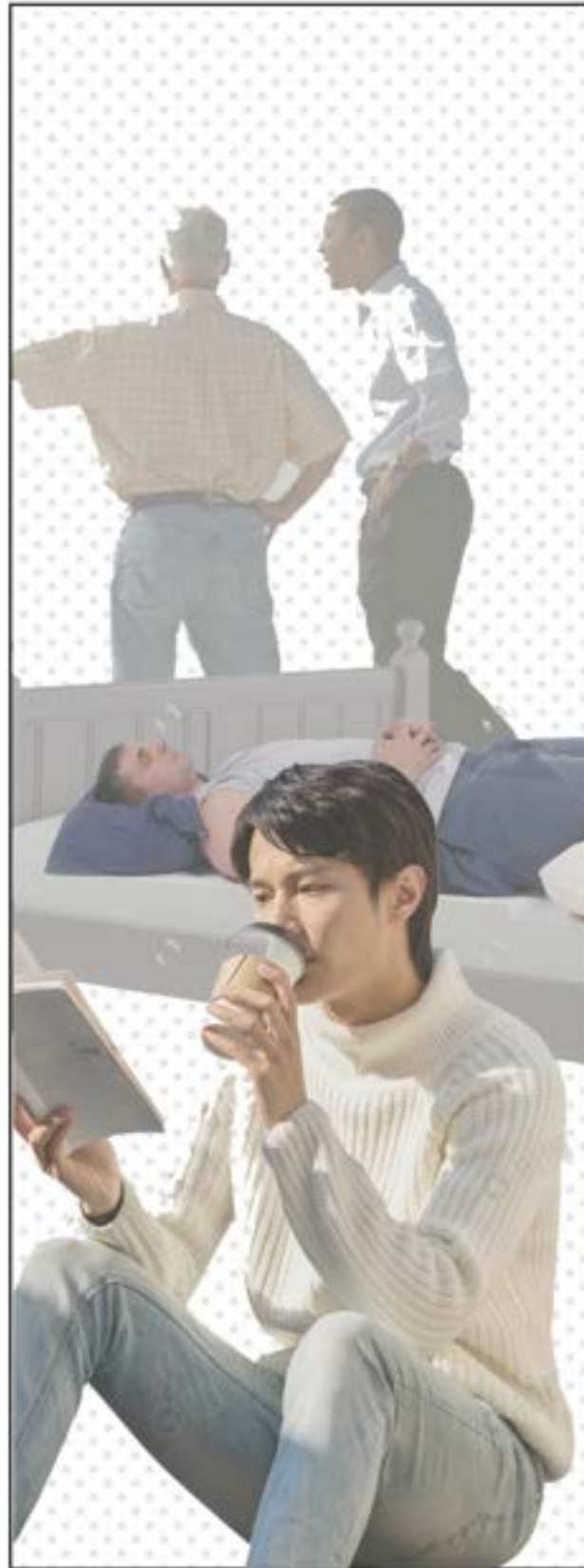
Learning purpose its a space for learn. They might have ergonomic arrangement layout which should accomodate comfortable and productive workspaces by bringing human abilities and limitations into the design.

Living purpose it's a space for doing life cycle activities, kind of bathroom, bedroom, space for eating. The bubble diagram show its included part of learning purpose because its located at the school space and so they need the design criteria of learning purpose .

Gathering Purpose it's a space for many people gathering in the one space. The spaces itself named as open space and Mosque. This area should developpe the sensory reach and degree of transparency in movement spaces.



LEARNING PURPOSE



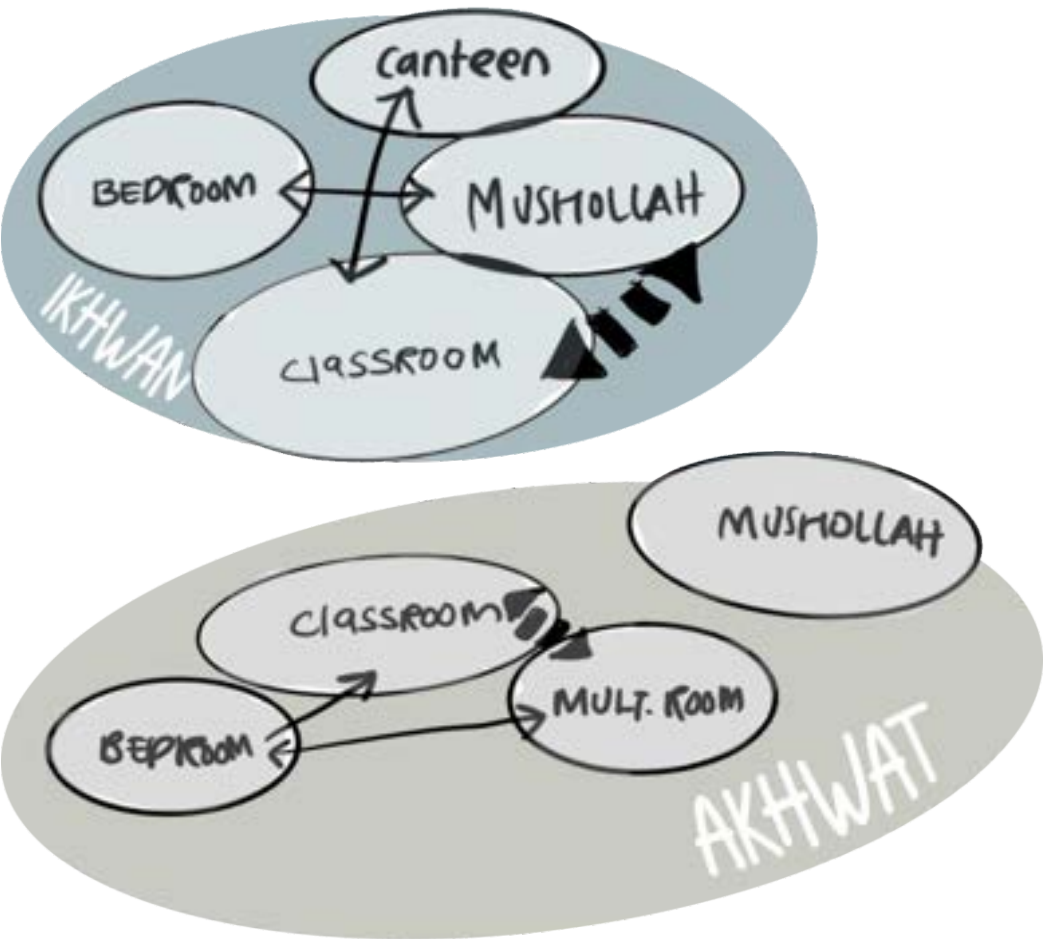
LIVING PURPOSE



GATHERING PURPOSE

Figure 3.6 Purpose Illustration Diagram
Source : Author, 2022

1.5 ROOM LAYOUT ARRANGEMENT

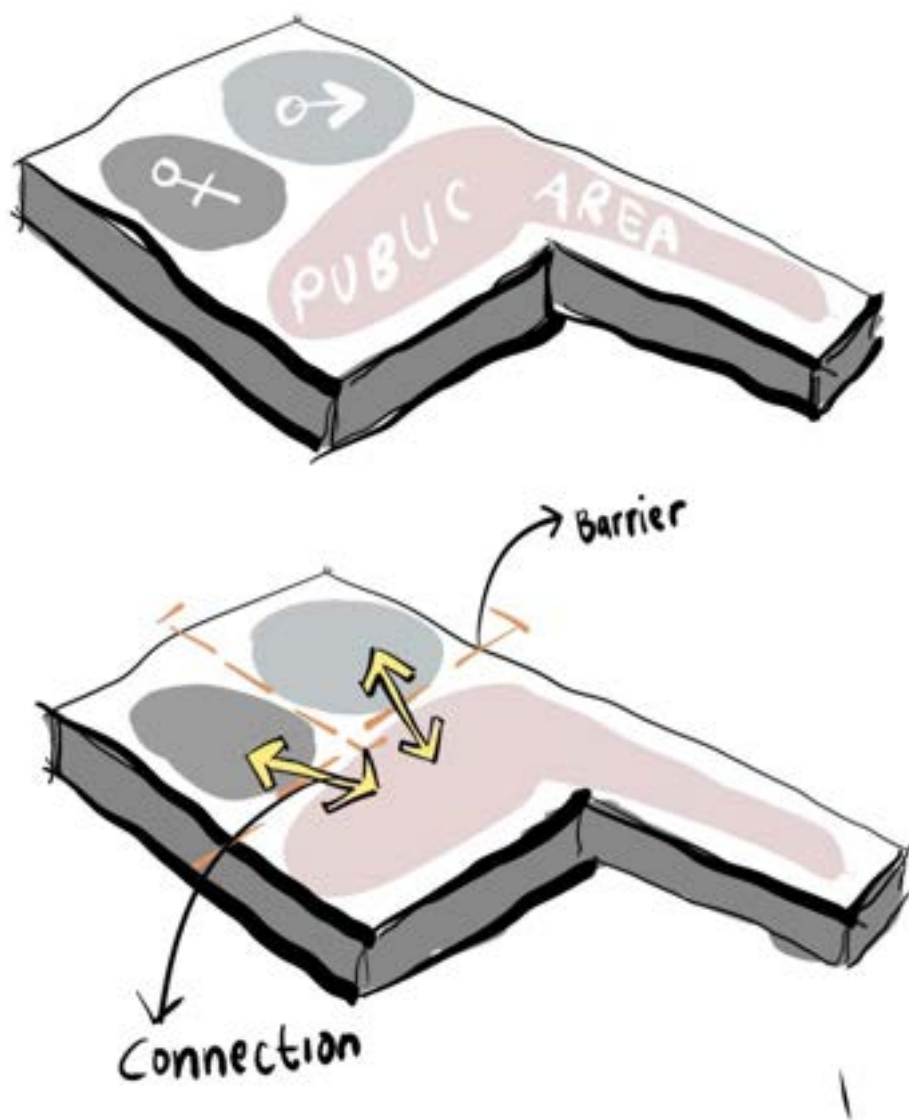


The division of space through this bubble diagram shows the direction of circulation that occurs in each space. As previously discussed.

Bubble Diagram for Male Student (Ikhwan) has this kind of connections. Canteen and Classroom have strong two way connection. Bedroom and Mushollah also have the two way connection, which the Classroom and Mushollah have merge space due the islam learning activity. So, it has different connection, because its has the same area purpose (area for learning).

Bubble Diagram for Female Student (Akhwat) has different type connection than the male. Akhwat classroom should have direct connection thru the multifunction room. While bedroom have the connection thru that two room. Mushollah which has same place as mushollah for male havent have strong connection to any room, because its not obligatory to do pray in Mushollah. They can pray on bedroom or multifunction room.

Figure 3.6 Room Layout Illustration Diagram
Source : Author, 2022

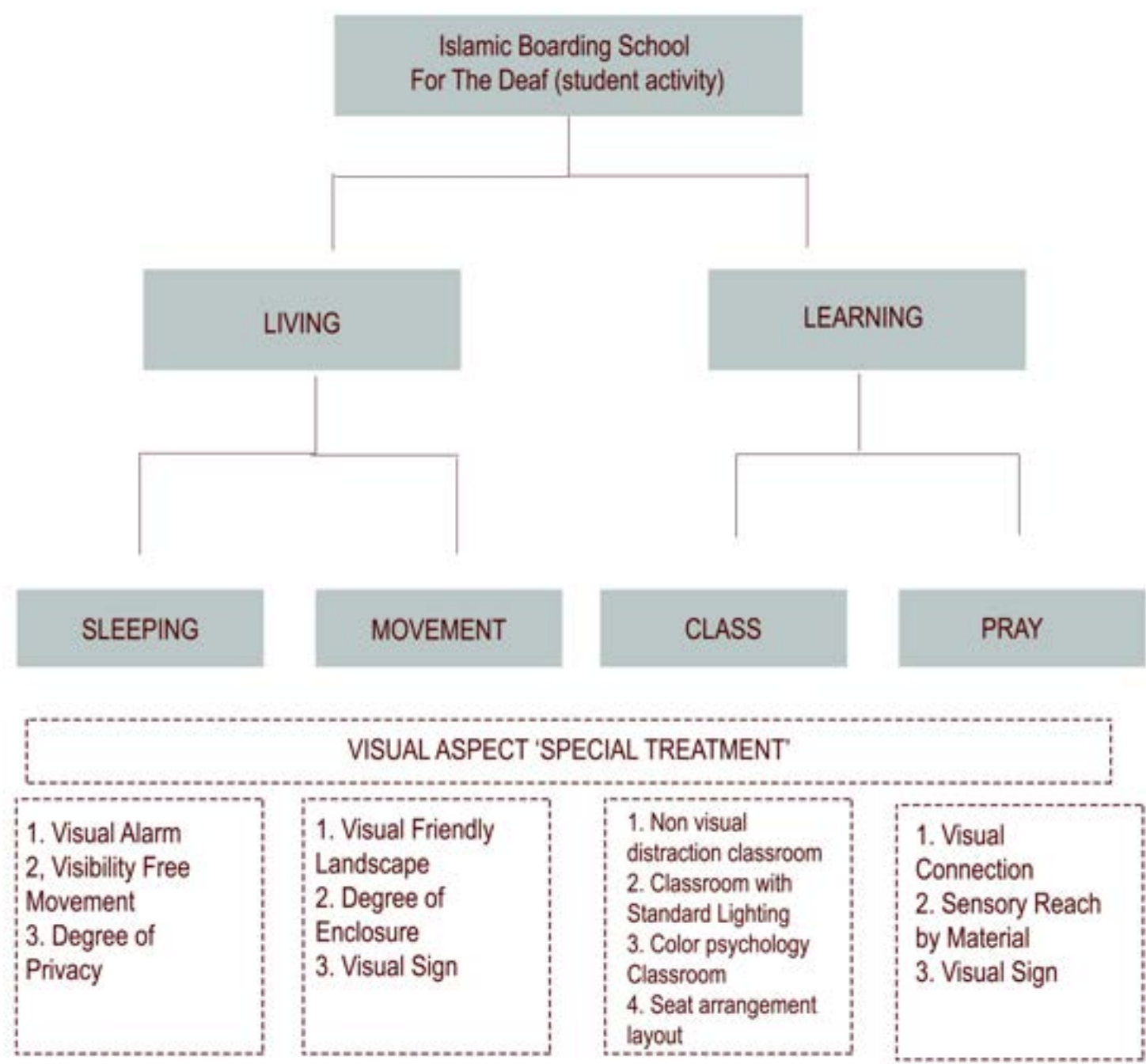


Not forgetting that the space here is divided by privacy function, so public and private must be clearly divided by barriers. Besides that, the barrier needs to divide the space of the brothers and sisters. The barrier must consist of a useful space, so that it does not waste space and that space can have a useful function. The connection between brothers and sisters needs to be designed in such a way that what should be a two-way connection can only be visually accessed by the teacher.

Figure 3.7 Room Barrier Illustration Diagram
Source : Author, 2022

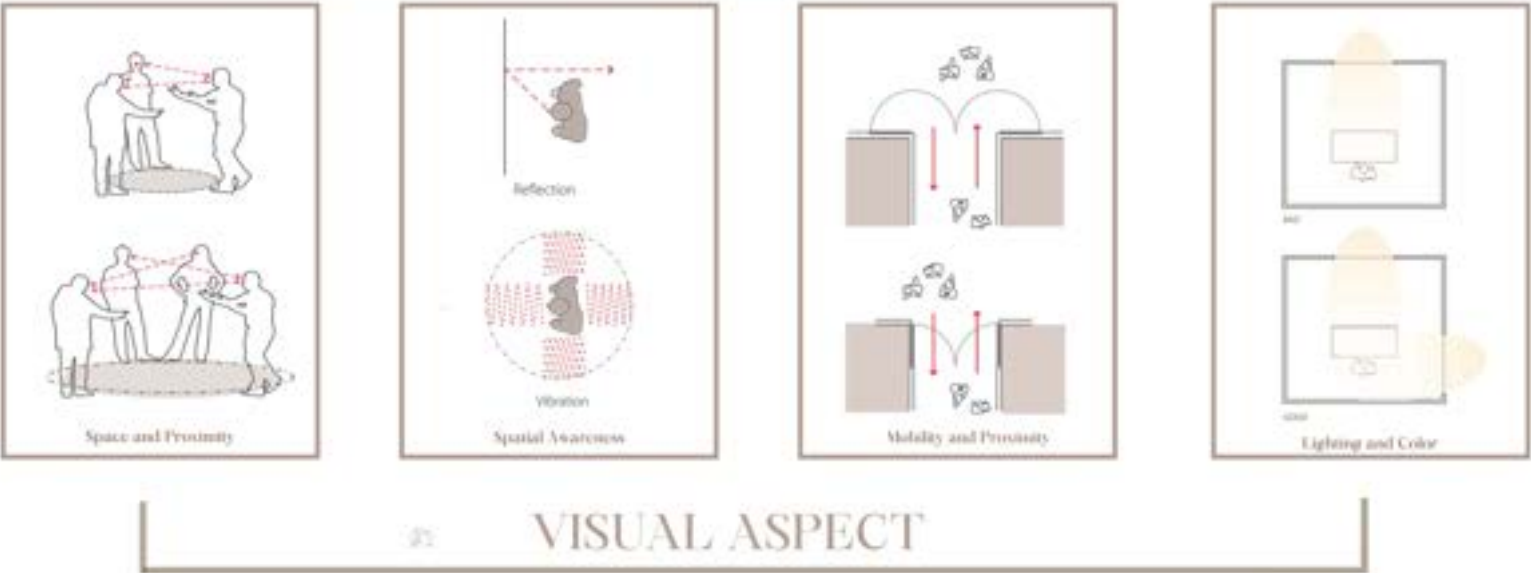
1.6 SPECIAL ROOM TREATMENT CONCEPT

In addition several rooms at Pondok Dahrul Ahsom have a special design to support the creation of the right atmosphere for deaf children. The concept of this special room pays attention to the visual aspects that support in creating the right space or environment for the deaf.



The following is a schematic description of the visual aspects and where we mapped out the concept in the design of each room in the Islamic Boarding School for the Deaf building.

DEAFSPACE GUIDELINES THAT CORRELATED TO VISUAL



1. Non Distraction Classroom

Analysis Design of Classroom

Human sensory ability is really important for schools because you can't go directly into the brain, the only way to get knowledge into the brain is to go through the senses (Marcus Adrian. 2018). You may hear something, you watch something, or maybe just felt and you will get it. This ability becoming important because when you are student of the class, your teacher really need your attention and attention itself need your sensory programing. Marcus Adrian on TEDxGateway Arch said, "Attention is focus on signal in the context of noise, which signal is everything that reinforces learning and carries the lesson. It can be a teacher voice, a picture at the smartboard, or an image on the projector. Then, noise is everything that interrupt, so it could be a bus rumbling outside the window classroom, it could be a footfalls on the corridor trrafic on the side of the classroom, or maybe just a big head that block your vision to the board." So, to designing a classroom for the deaf, we should pay attention on what kind signals that deaf student use when they have to focus, and what kind of noise that may distract the focus.

Darul Ahsom Boarding School for the Deaf learning method use American Sign Language, wich all of the learning process used visual based. To study this case, we should know about what kind of signals from Darul Ahsom Learning process.



Figure Metode Pembelajaran Tallaqi dengan ASL (American Sign Language)



Figure Metode Pembelajaran Hallaqah berjamaah berpusat pada guru di bagian tengah.

HOW TO AVOID THE DISTRACTION?

1.1 By Designing Classroom Layout

Classroom is the crucial part of school environment. It's a place for transfer ideas and knowledges. To make non distraction classroom, we should pay attention with the layout. Layout is determines the spaces, dimensions, and positions of internal or external building spaces to satisfy architectural criteria [Ziveng Guo, 2016]. As our mention before, sensory reach for the deaf they only have 180 degrees of visual range, which is always in front of your eye. The layout of board, students seat, teacher seat, could be calculate. One of the goals is to minimize the cognitive and

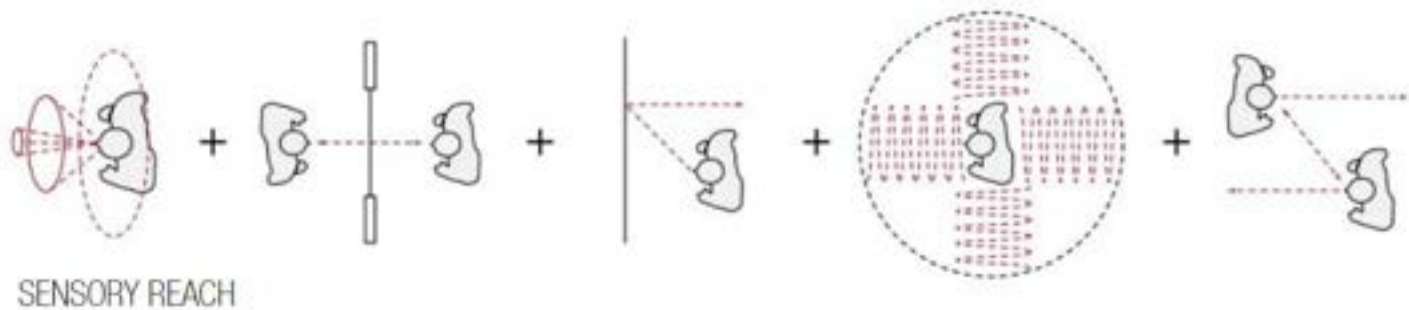


Image show the deaf sensory eyes range to understand the environment.
Source : Gallaudet University Design Principles

Deaf Education Worldwide still recommended that classrooms for Deaf students be set up in a semicircle or U shaped facing the presenter/screen so that all students can see each other, understand when anyone is speaking, and read the nonverbal cues of their peers throughout the day. The classroom has one focal point who is the teacher that used ASL method and the lips reading. This concept in accordance with Darul Ahsom learning method *Halaqah*. Which in Islam its has means that teaching and learning process carried out by students by circling the teacher concerned. Designing U shaped seat layout we should understand the antropometric and ergonomic of classroom environment. The ideal maximum number of desks for this arrangement will vary with classroom size, is is important to maintain a distance that will allow occupants to maintain focus on visual communication (Gallaudet University,2010). By using anthropemtric of human, also the proxemics study we can understand a display of elements based on the better use of its functions and relations.

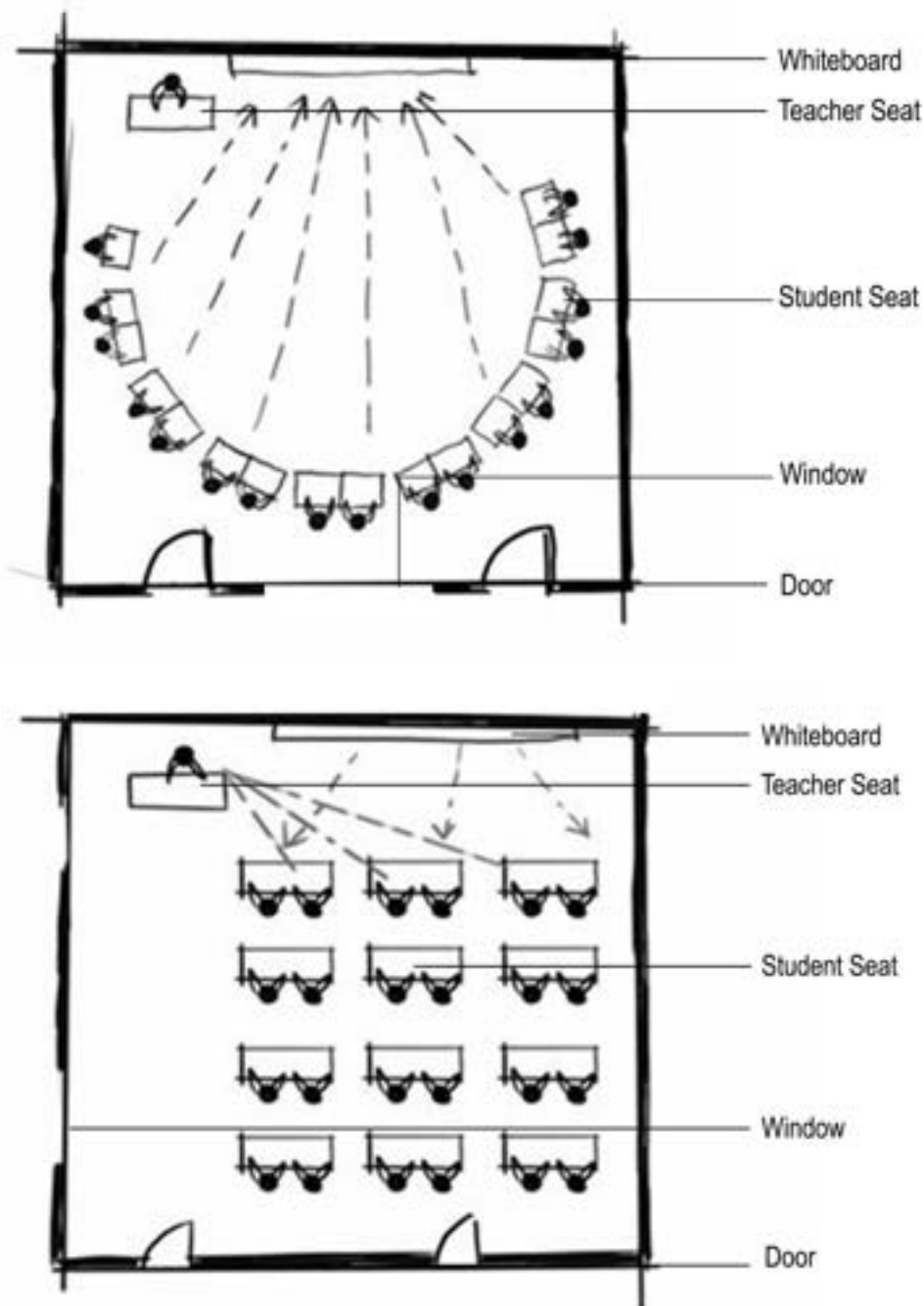


Figure Deaf Classroom Layout and Common Classroom Layout
Source : Author

The picture beside is the difference between classrooms in general and classrooms designed for deaf students according to the journal *The deaf and the classroom design: a contribution of the built environmental ergonomics for the accessibility*, Martin and Gaudiot, 2012. Classrooms for the deaf have a shape different table layouts in general classes. The rotating layout is the layout that makes it easier for children to pay attention to the blackboard and still be able to communicate with other children easily. In addition, the layout in the general form does not minimize the blocking vision of the front students.

The placement of the window next to the class is of course one of the distracting noises. The window on the child's side makes it easy for children to let go of their concentration. This is because something that creates a flash of shadow, sometimes children will spontaneously turn around and lose focus on teacher communication using American sign language (Abu Kahfi, 2022). The principle of designing classrooms that do not minimize noise is the proper placement of windows, openings, and doors. Noise or distraction can come from odors, therefore the placement of ventilation needs to be considered. Another important thing is the opening design that can accommodate natural lighting, minimize dependence on electricity to save costs and avoid unpredictable power outages.

1.3 Proximics, Dimension, and Space

Proxemics means a study of the use of space by human beings in a particular culture (Edward T. Hall). Its also described as distance of interpersonal (the relative distances between people) in four zones. The intimate space, personal, social, and public space.

Interpersonal distance	Close range	Far range
Intimate space	<ul style="list-style-type: none"> Close phase – less than 6 inches (15 cm) 	<ul style="list-style-type: none"> Far phase – 6 to 18 inches (15 to 46 cm)
Personal space	<ul style="list-style-type: none"> Close phase – 1.5 to 2.5 feet (46 to 76 cm) 	<ul style="list-style-type: none"> Far phase – 2.5 to 4 feet (76 to 122 cm)
Social space	<ul style="list-style-type: none"> Close phase – 4 to 7 feet (1.2 to 2.1 m) 	<ul style="list-style-type: none"> Far phase – 7 to 12 feet (2.1 to 3.7 m)
Public space	<ul style="list-style-type: none"> Close phase – 12 to 25 feet (3.7 to 7.6 m) 	<ul style="list-style-type: none"> Far phase – 25 feet (7.6 m) or more.

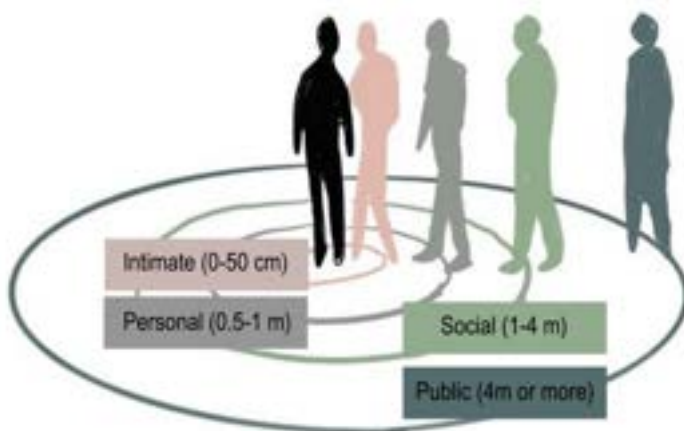
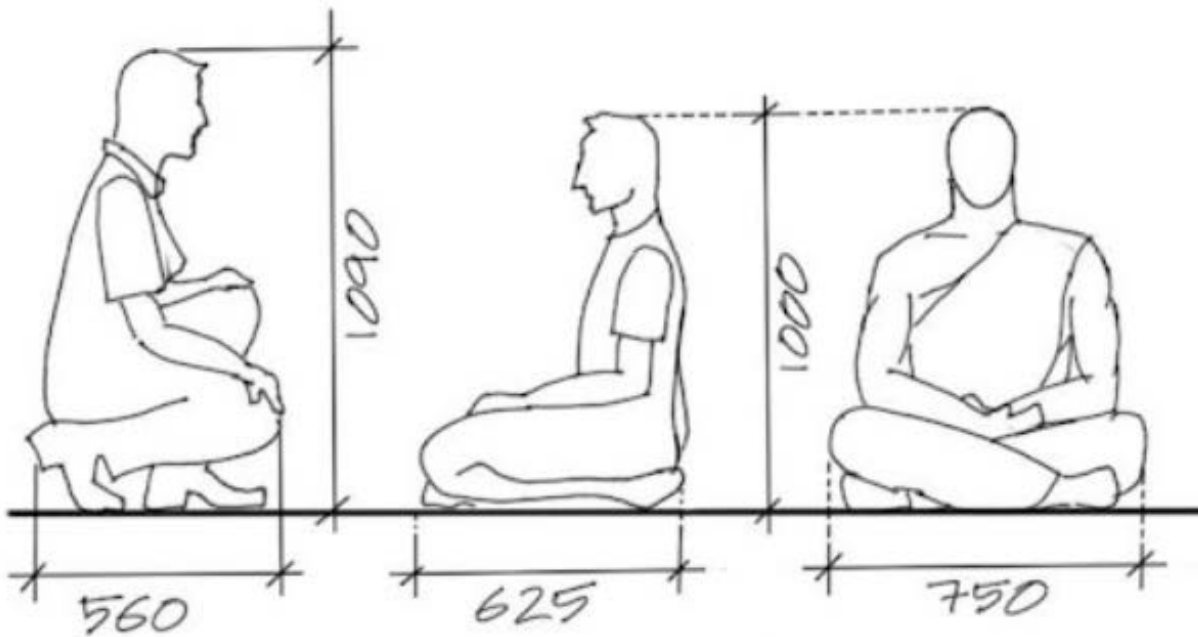
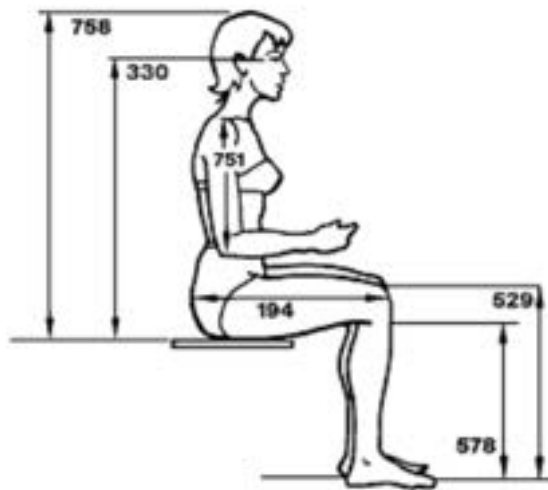


Figure 3.8 Interpersonal Distance
Source : Author

In addition to understanding proxemics space, designing classrooms and all buildings that are not expected to injure the eye requires a study of anthropometry and dimensions. In building a classroom, we need to know the standard distance between the blackboard and the students. The standard distance from one student to another. Its divided into four kinds of human proxemics relationships. Intimate, Personal, Social, and Public, that are defined by how much a range of people interaction. In the other hand we should also take a look of human body anthropometric. This study is needed to support the non distraction concept.



The pictures on the side are the basic anthropometric standard of a sitting human. All the dimension values in millimeter. The clearances of an adult human body of average build and its relationship to the built environment. This data help the bare minimum of the design space provisions while planning space layouts or furnishing.

Figure 3.9 (above) Figure 3.10 (below)
Source : archipaedia-archipod, nasa.gov



1.2 Visual Sign and Lighting for Classroom

Visual sign is consist of degree of enclosure, visual barrier, and the color psychologist.

For the hearing, degree of enclosure is associated with a sense of security. For deaf individuals a space that allow for visual control over the surrounding area bring a sense of security (Gallaudet University, 2012). For designing this school the window as opening used the proper glazed design. Figure above is the example of using the glazed window that making barrier but also wipe the barrier. The dimation of the opening also may allowed minimun two people in some public area. Its for making they might to talking while they just walking. in designing the glazed opening, we should used the principles of privacy. Visual access and opening should be balanced to enable inhabitants the ability to sense the activities within surrounding spaces, it should maintain the desired degree of privacy (Gallaudet University, 2012).

Ruang	Standar Pencahaya-an (Lux)	Perbandingan Ragam	Indeks (Glare)
Ruang kelas umum	300	0,8	19
Ruang kelas khusus	500	0,8	19
Area sirkulasi:			
Koridor tangga	80-120	-	19
Lobby, area tunggu	175-250	-	19
Resepsionis	250-350	-	19
Atrium	400	-	19

Sumber: SNI 03-6197-2000, 2011

All activities require optimal and appropriate lighting levels. Lighting good work becomes very important to display tasks that are visual in nature. Lighting that better will make someone work more productive. As for the recommended values for a room or place in an institution education in general as a national standard for lighting can be seen in table 1. For a classroom in general, it is highly recommended to use fluorescent lamps. In arranging the position of the lighting source in the classroom, it is very important to consider and pay attention to the presence of the window, because it is a natural light source for the classroom.

Classroom lighting minimizes the use of artificial lighting. This is because all ways of communicating with deaf students are visually oriented. The use of natural lighting will provide little potential for blackouts in the absence of electricity. Energy efficiency and visual comfort are keywords in school lighting design. The balance of direct and indirect light that is available enough in the classroom can support students to do well on paper and computer-oriented tasks (Perkins, 2001: 138). In classrooms that use blackboard teaching media, lighting must be paid attention to the media. This is to ensure that light reflections do not cause vision problems for students especially those sitting near the blackboard. For whiteboard media, the recommended lighting strength is 300 lux, while for blackboards with reflecting power not more than 0.1 then the recommended lighting strength is 500 lux.

Adding artificial lighting is just adjust odd on program. Classroom's ceiling, the standard stipulates 30 lx, but recommends a minimum of 50 lx. To achieve the positive effects reported in Fagerhult's studies, we advocate 300 lx with indirect light in the ceiling. For walls, the standard stipulates at least 50 lx and at least 75 lx as a recommendation. We recommend at least 250 lx for the walls. Well-lit ceilings and walls provide good ambient lighting and consequently more alert students who perform better. Light located at the above of workplace, and more brighter is located at the board.



Figure 3.11 Deaf Student Classroom
(Source: fagerhult)

1.3 COLOR ON LIGHTING

Influence of Blue-Enriched Classroom Lighting on Students Cognitive journal by Oliver Keis, etc (2014), states that the color blue enriched lighting is able to have a positive impact and increase students' cognitive performance while studying. In proof, a study conducted by 58 high school students used one classroom equipped with blue-enriched white lighting, while the other classroom with control setting. Results show beneficial effects at the classroom with blue-enriched white lighting in compaison to the standar lighting conditions. This test standarized by psychological test. The blue enriched white lighting seems to influence very basic information processing primarily, as no effects on short-term encoding and retrieval of memories were found.

In the case of designing a school for deaf children, the architect needs this invention in order to maintain optimal learning capture for the students. Eye conditions are normally the same between deaf students and normal-eyed students. However, blue-enriched white lighting is suggested to be used for morning study hours and avoided at the evening and during the night. Its for preventing impaired sleep quality or delayed sleep time. At the night we should lower illumination levels and reduce indirect lighting. Of course blue-enriched lighting can be useful in implementing it in classrooms and bedrooms as a visual alarm for students to wake up in the morning..



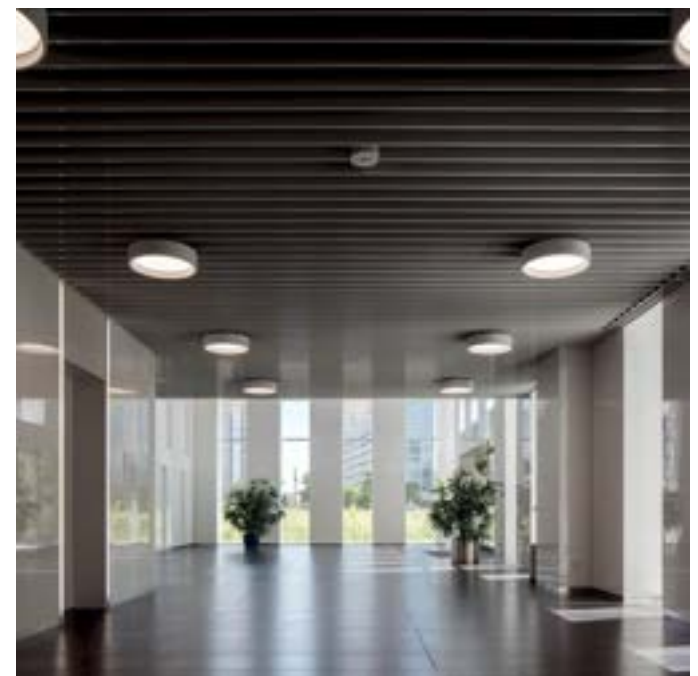
Figure 3.11 In an experiment, the research team installed two lamps, one in the color of blue-enriched white (top) and the other in orange-enriched white (bottom). (image: KAIST)

Besides knowing the color of the light that is suitable for the classroom, we need to know the intensity of the color temperature. CCT (Correlated Color Temperature) is a characteristic color temperature, its essentially a gauge of how yellow or blue color emitted from the light bulb appears. Its measured by Kelvin unit (K). Low CCT was on (1.300-3000 K) and usually called as warm color. Cool light sources have a high color temperature ($> 4000\text{K}$) and feature more light in the blue range. as an example of the cool light is used as the blue light of school hallways or hospitals.

For suggestions based on CRI the cooler color temperatures (3500-5000K) are good for setting an energetic atmosphere and promoting alertness. This supports the research in the previous paragraph, that blue-enriched white lighting has a positive impact on students' cognitive performance.

1.4 LAMPS

In the picture of a classroom for deaf students by fagerhult, it is highly recommended to use artificial lights and natural lighting. In Fagerhult's research, two types of artificial lights can help deaf students with visual clarity, namely, 1) chandeliers with a relatively small number of windows, 2) surfaced lights with a relatively large number of windows. The colored 'collar' interplays with the building's architecture, adding an extra dimension to the interior through the reflection of light. The colored rings reduce glare, highlight the shape of the luminaire, and add color in both their lit and unlit states. This design emits diffuse light via a high-efficiency acrylic diffuser. This design is also decorated and seems like more modern. The two pictures beside show a lamp with a "colored collar" which is in accordance with Fagerhult's research.



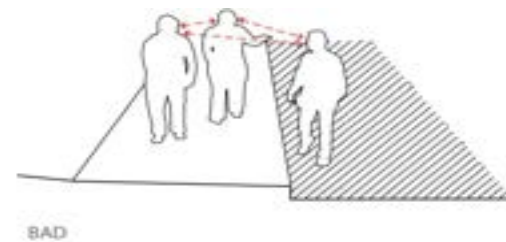
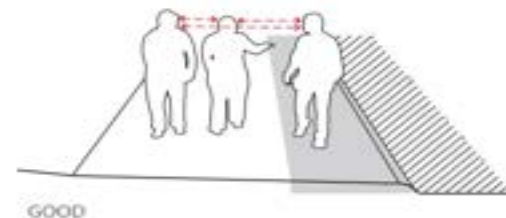
2. VISUAL FRIENDLY BUILDING AND FACADE

2.1 Visual Friendly of Circulation Area



Figure 3.13 JLSLCC's interior opening and transparent connection between space
Source : SLCC

What is visual friendly building? For the deaf, all of the information can't get it by the hearing. They might feel the steps by tactile sensory, or they might see the reflector by visual sensory. So, for the deaf, the information of people coming or what happened on the behind you can be get if we designing the good opening. The example of implementation view and vista this implementation has been built on James Lee Sorenson Language and Communication Center, Washington DC. One of the key features are the creation of the open, light, and transparent connection between spaces to ease visual communication [Smithgroupjjr.com, 2016]. This building designed by full-height glazed facade to a bright central atrium with direct of visual connection between all spaces. Using the sense of touch, the street that made for deaf student can be design with the material that can get some vibration if people step on it. So, the transfer of vibration will tell the deaf student that there are people coming or leaving. Based on the Deaf Space Design Guidelines, the proximity between the hallway or pathway should be proper to give information there was a people or not. Some design materials that may help : (1) Use the tactile sense with vibratory friendly materials. (2) Use reflector material that can give information by reflections.



Use the dimension guide to design the pathways or circulation area. While design the room, we make the circulations depending the function of the room. Corridors for two way street should be a minimum of 2,4 meter wide and corridors for two people should be a minimum of 1.22 meter wide. Corridors should be designed to provide conversation nodes located outside of the pathway flow (Gallaudet University, 2012)

Deaf individuals using sign language need to initiate communication with eye contact and must maintain a clear visual window in which to hold signed conversations. They utilize touch as an integral part of the language and rely on extremely subtle facial and body movements while holding a conversation. Hearing people modify their utterances to convey whether the message is intended for private or public audiences. For instance, a hearing individual may privately whisper to another by moving close together and lowering the volume of their voice. But how with Deaf People. Based on Hansel Bauman, privacy can be making without closed all area isolate them (may makes them didnt know what happened on the outside) used this kind of eddies (Figure). The pictures is making the space that occupied some people to communication more instens in circulations area. They can stop on the converstation eddies.



Figure 3.14 Dimension between two people walking
Source : Dimension.com

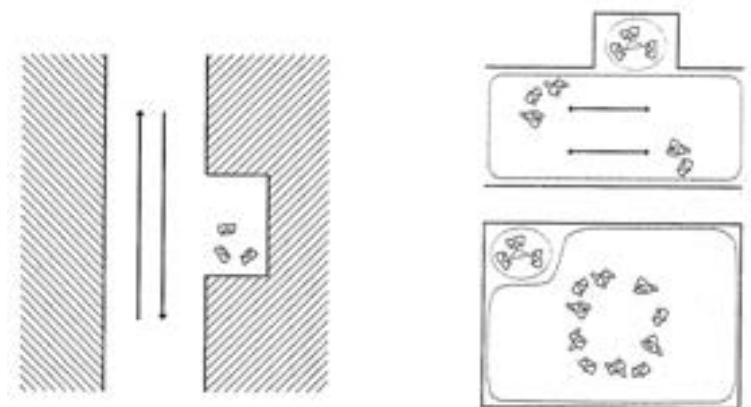


Figure 3.15 Nodes
Source : Hansel Bauman

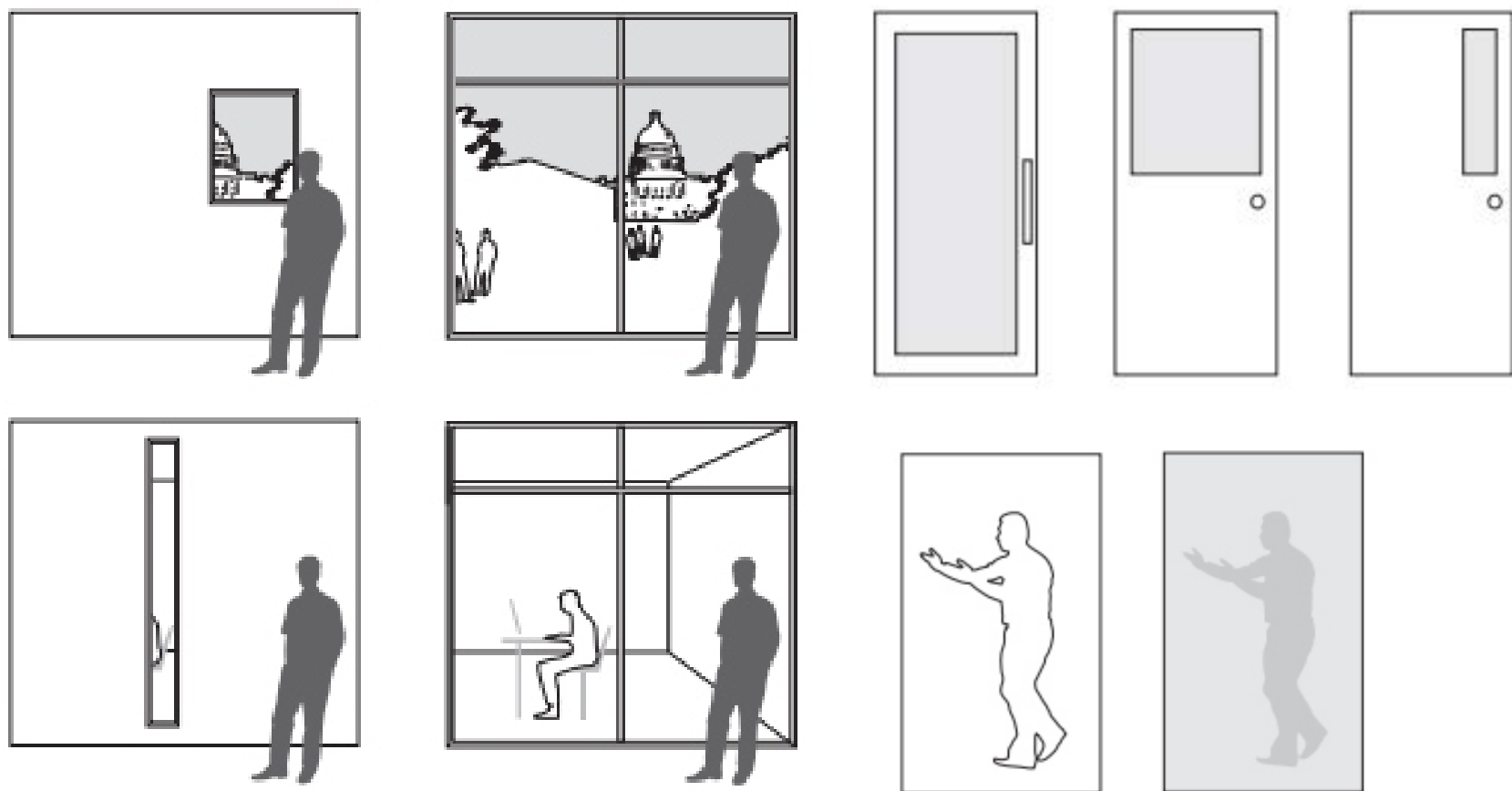


Figure 3.16 Types of transparency on the Door Glas
Source : Deafspace Guidelines, Gallaudet University

2.2 Visual Friendly Connection

Inside buildings, openings should be located to allow deaf individuals to see their colleagues at school and in social situations. Transparency of walls and doors, large unobstructed openings and sliding wall panels should be used between the mass, circulation and communal spaces when appropriate to visually connect people while satisfying access and privacy requirements. It is highly desirable to open up interior building spaces, especially social spaces such as conference rooms, lounges, building lobbies and eating areas to exterior circulation paths and common areas. Making a ground floor that is as transparent as possible is an effective means for achieving this, but upper level building spaces may communicate with outdoor areas as well. Highly transparent glazing should be used and heavily reflective or tinted glass should be avoided if we want to see outside. We already talk this idea on the paragraph of classroom visual barrier. In the facade this principles of glazing window can be adapted also. Figure show about degree of privacy by using different glass materials. For achieved the goal of Visual Friendly Building, this part was such crucial also.

Connection between mass should easy to know. Itss means, when you are in the head office you might know the differentiation by the visualization. Not in word things. Maybe we can just read "Head School Room" on the small board, but how if we design that offices by different tactile and color sensation. 🧐

2.3 Playing with Color and Texture

Deaf People are used to keeping eye contact with others during visual conversations while concurrently scanning their surroundings to retain a sense of personal space, safety, and direction. Such steady eye focus and quick reflexes movement can fatigue the eyes, which can lead to a loss of focus and orientation in particular when there are bad environmental circumstance visual clarity that is obscure. Making use of color and surface texture correctly light can improve a person's vision, lessen eyestrain, and enhance happiness and make finding things easier.

The principles of color based on Gallaudet University's Deafspace Guidelines are:

1. Color and Surface Texture
2. Solar Color and Daylight and Shade
3. Electric Light, Shaping Space



Figure 3.17 Contrast Color Theme on Office
Source : Moca Arquitetura, Archdaily

The image is Moca Arquitetura by MAD Architects, as you can see in many of Moca's projects, the colors played a fundamental role in the division of spaces and in the personality of the environment. In this case, it was necessary to take into account the incidence of light and color in the space, thinking about specific lighting that would not interfere or distort the results in the printing tests and in the product development process. This idea is implementation of deaf space color division of spaces. The color chosen for the wall cladding and some materials also contrast it help to communicate without distraction because of similar color. This color-testing interiors ensure ideal color and lighting conditions also.

3. Visual Barrier Landscape

Design Study of Visual Barrier

3.1 Space, Proximics, and Dimension.

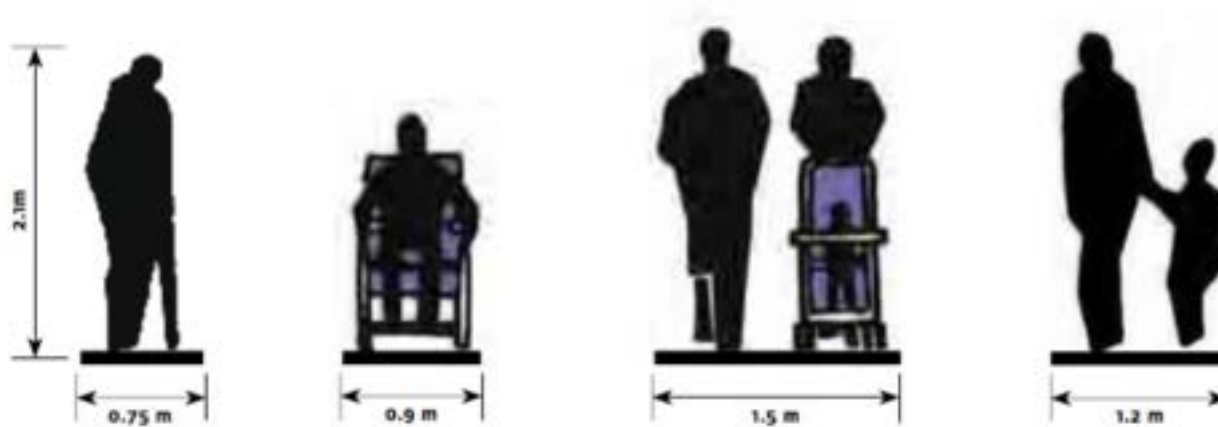


Figure 3.18 Dimension of People Walkspace
Source : Dimension.com

Designing landscape for the deaf, we should have consider to the dimension and space proximics. Its for the comfort of user and minimize the harm things. Some of guidelines standar should be the basic consideration to make the comfort pathways. Data according Department of Transport document Manual for Streets. There is no minimum width for pathway, however it does give guidance on widths for users. The width of this raised pathway is considered against its car park location and use, its allowed for all types users which a person to a person being guided, people with prams, disabled persons, and wheelchair users. Vaughn's design draws on principles of the Deafspace Project which was established by Hansel Bauman at Gallaudet University stated that "These barriers range widely from the absence of visual signage on transportations to the lack of space to communicate with sign language while walking on public sidewalks"

The following guidances based on Document Data Departement of Transport document Manual for Streets :

- Person with a walking stick – 750mm
- Person with a child side by side – 1200mm
- Person with a walking stick requires 750mm width of path
- Person with a walking aid (frame) requires 750mm width of path
- A wheelchair as 700mm wide or allowing for elbows 900mm width
- A visually impaired person who is being guided requires 1200mm width of path



3.2 Visual Boundaries

The contrasting color differences provide clear layout boundaries. It should be noted that the deaf may have color blindness in the sense of sight. Boundaries on the road are important because they involve a person's life when walking. The boundaries between khaki pedestrians, two-wheeled vehicles, and three-wheeled vehicles must be clear so that even people with color blindness can easily distinguish them. Picture above is the design of street designed by Toole Design in St. Paul, Minn. The different elements on each path in the Design Tool provide clearer visual boundaries.



4. Deaf Friendly Mosque

Design Study of Deaf Mosque

4.1 Deaf Mosque Activities

Beribadah sesuai ajaran Al Quran merupakan hal wajib bagi setiap umat muslim. Sholat wajib dilakukan pada 5 waktu, pagi, siang, sore, maghrib, dan malam. Fungsi masjid sebagai tempat beribadah harus mewadahi sholat pada dasarnya. Selain itu, aktivitas lainnya adalah belajar menghafal dan membaca alquran secara halaqah.

Berikut merupakan cara cara beribadah (Mengaji) pada anak tunarungu pada Pondok Darul Ahsom :

1. American Sign Language
2. Lips Reading

Untuk gerakan sholat pada umumnya sama, namun yang dibedakan mereka tidak dapat mendengar beberapa isyarat melalui pendengaran. Oleh karena itu adzan yang pada umumnya dikemandangkan dengan speaker diganti dengan lampu flash yang mengisyatkan secara visual bahwa saatnya sholat. Gerakan ibadah sholat pun sama, dari sujud, rukuk, hingga atahiyat akhir, namun dalam memudahkan sensory reach mereka. Kami menggunakan lantai yang mampu mengirimkan sinyal tactile ke jamaah. Permainan material merupakan salah satu faktor desain yang dibutuhkan.

4.2 Increasing Sensory Reach by Materials

Meningkatkan sensory reach dengan material bisa didapatkan dengan reflective material dan vibratory material. This are the materials suggested that may have good potentials as reflective materials:

1. Reflective Concrete Floors.

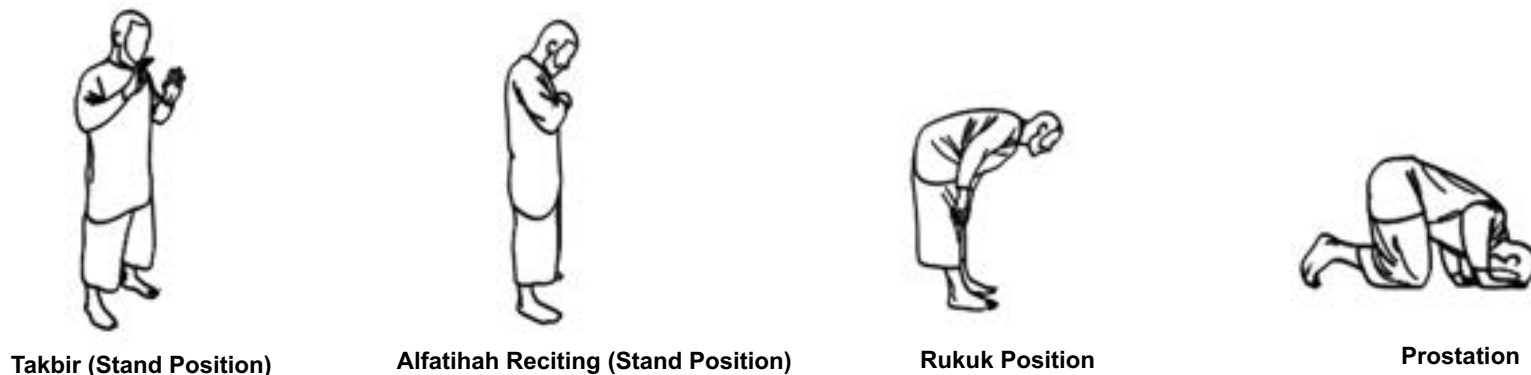
- May brighten a room with their high light reflectivity, installing light-colored polished concreted may brighten a room.
- Reduce the electricity used, it amplifying the amount of natural light that entering the building during the day (reflective support natural lighting rate 30%)
- Long service than the other type

2. Ceramic Tile

- Easy to clean up
- Affordable and easy maintain

3. Wood/Timber Flooring

- Has real hardwood top layer
- Greater resistance to moisture and water than real wood
- Less likely to warp
- Multiple installation methods
- Can sound hollow underfoot



Source : MyPrayer Booklet

Sholat (Pray) have kind of movement steps that normally imam said “Allahu Akbar” to announce that we should change to next movements. The picture above show the steps movement of Salat. When we do sujud, we might not able seen what imam do, or front people do. So, vibratory material helpful for give the sensory reach to the makmum to know what happened. To design by timber flooring we should understand, that timber may not good enough to reflect, meanwhile reflective was crucial because the shadow helping deaf people to get visual sensory awareness behind or next them. To make the timber wood reflective, we can used coating with oil. Using coating, product will be able to achieve greater adhesion and chemical resistance, and also mantaining the lifespan of timber flooring.

4.3 Visual Sign

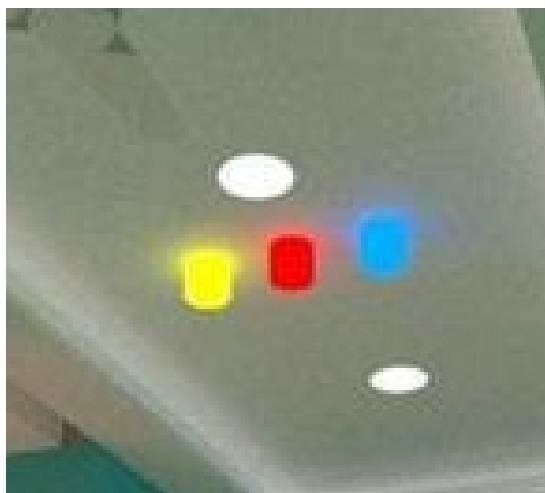


Figure 3.19 Strobe Color
Source : Google

Some visual alaarm that can be used to give announce to the deaf are 1, Strobe Light 2. Neon Lighting. For give announcement that can reach wide range, the light should have big power. A colorful strobe light give visual information if blue for adzan, then yellow for iqomah, and white for they are still praying. Based on Journal Providing Support Services for Deaf-Blind Student in Mainstream University environment stated that the student could detect the strobe and respond appropriately it. So, its effective for the deaf or hard hearing people. So, whats the problem is the accesibility to be able see the strobe light while you are inside the buiding. The light range of strobe light is about 3 meters. So architect need to give attention on the place for the strobe light. Don't make some blocked things that may make strobe light cant be seen.

5. Visual Alarm for Emergency

Alerting and alarm devices designed for deaf should keep they are connected and safe every day and in emergency situations. They mostly use one or more of these types of signals:

- Visual: A bright flashing light
- Vibrotactile: A vibrating or shaking component
- Auditory: increased volume and use of lower frequency sounds

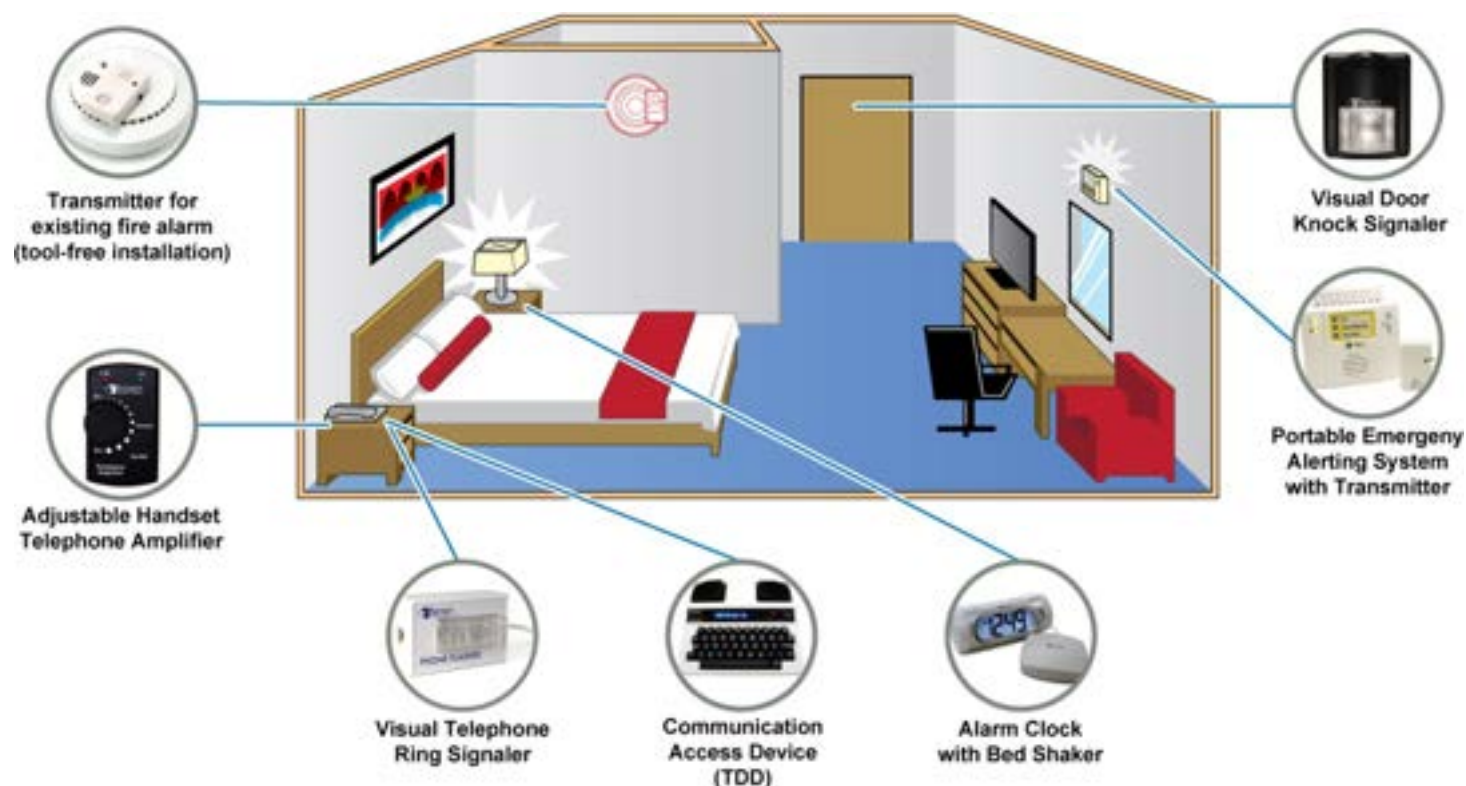


Figure 3.20 Emergency Stuffs
Source : Google

ADA Compliance designing a room that convenient and economical for the deaf kit alarm. It includes of all devices that needed when emergency is happening. Bed shaker was such difficult and not ergonomic because the capacity of the students, its may located at some pillow for the leader of the generation. This precedent show the quick and easy set up, no tools required and simple storage.

Visual Alarms Varieties



VISUAL TELEPHONE RING SIGNALER

This telephone has no additional power supply needed. The dome shape disperses light to signal for incoming call.



VISUAL DOOR KNOCK SIGNALER

This ultra shining and long-lasting Driven pointer alarms your visitors when somebody is thumping at the entryway. The versatile and helpful entryway knocker can be utilized as an electric lamp within the occasion of a control blackout. Incorporates a moo battery pointer light.



ALARM CLOCK WITH BED SHAKER

Particularly planned together with non deaf. It can give vibration on the bed, but it should be well planed, located at where. If in the class there was 50 students, at least 5 people have this bed shaker to make them woke up if something happened and tell to the others.

FIRE EVACUATION

While the Environmental Health and Safety (EHS) Department works tirelessly to mitigate hazards, decrease the chance of a fire from occurring and ensure all our buildings are compliant with the adopted fire codes, it's inevitable that the time will come when you need to evacuate during an emergency.

- Always know two ways out of a building and familiarize yourself with the general layout of your building before an emergency occurs. Your evacuation strategy should include the use of a stairway to evacuate, never an elevator.
- Check all windows to ensure they will operate during an emergency. Things like screws, nails and even excessive paint build up can prevent a window from opening.
- Never ignore a fire alarm signal. Gather up your personal items (if it is safe to do so), close the door behind you and evacuate quickly.
- If the fire alarm system has not activated, pull the closest fire alarm pull station to alert the fire department and begin the evacuation process for others within the building who may not be aware.

Temporary Evacuation is stopping at the assembly point that has been provided by the school, namely the assembly point. Assembly points/muster points are important elements in emergency response planning. In accordance with PUPR Ministerial Regulation No. 14 of 2017 Concerning Requirements for Ease of Building Facilities, paragraph 3, article 24, every building except for single dwelling houses and simple row houses must provide evacuation facilities which include exit access, exit, exit release, and other evacuation support facilities.

Meanwhile, Article 28 paragraph 1E states that other supporting facilities as referred to in Article 24 paragraph 1D consist of assembly points. The design and provision of assembly points must be clearly identified, marked and easily visible.

- The minimum distance of the assembly point from the building is 20 m to protect building users and visitors to the building from collapse or other hazards. The gathering point can be a street or an open space. The location of the assembly point must not impede the access and maneuverability of the fire engines. Have access to a safer place, out of the way and easily accessible by a vehicle or medical team. Other requirements regarding assembly points follow the provisions of laws and regulations concerning fire protection systems in buildings and the environment.

Meanwhile, according to the National Fire Protection Association (NFPA) 101 of 2000, the criteria for gathering points include:

- Provides space of 30 m²/person with a minimum height of 200 cm or more and can accommodate all occupants.
- The minimum distance of gathering points to be safe from falls and other hazards is 6.1 meters.
- The location has access to a safer area and does not block hazard response vehicles.



EMERGENCY SIGN

Safe condition & first aid signs are used to indicate where emergency exits and safety & health equipment can be found. ISO 7010 safe condition & first aid signs always include a white square on a green background with a standardised white pictogram. Every sign is shown with a short explanation and its official ISO 7010 number.



VISUAL WEIGHT.

Physical weight deals in pounds and ounces, whereas visual weight is all about how something is perceived by the eye (Firda Ramstedt, 2020). Like leadings lines, visual weight is something we can consciously use to emphasize a focal point in a room and draw the eye where we desire. If we want to create a focal point in a room that has light color, so the eye will probably be drawn to a darker object.

TEXTURE

Working with texture contrasts is a useful technique when you want to create a sense of depth in a room. If you experience a room as flat and heavy, it's a good idea to look at how many differet tactile surfaces there are; perhaps you need to introduce more variation.

ISOVIST

Term Isovist in architecture used to descirbe sight lines and visibility from a given point in a room. How much or how little can you see from a particular point? From prespective of survival, the ability to read and process information about the environmment is so important, we seem to need identify the parts of room that have best isovist and thus provide optimal sight lines and visibility.

REPETITION

Repetition is often used as means of creating structure. If similar elements are repeated in a number of places, the interior design feels more considered and cohesive. Repetiton also help people to lead the way.

PATTERN

The size of a room or the area of the wall can be good pointers when it comes to choose pattern. There is an old rule of thumb that says “Small room, small pattern; large pattern, large room. Wallpaper with a large pattern tends to draw attention to itself. It becomes the main feature of the room and overwhelms furniture placed in front of it. While with small patterns, there is a tendency for a patterns to flow and merge. The pattern itself will become more of a background for the furniture placed in font of it.

04

CONCEPT IMPLEMENTATION

Concept implementation to the design.

- Alternative Design Mass
- Analysis and Choosing Alternative
- Spatial Connection
- Concept Design of
 - 1. Non Distraction Classroom
 - 2. Visual Friendly Building and Facade
 - 3. Visual Barrier
 - 4. Deaf Friendly Building Mass
 - 5. Visual Sign and Alarm

GENERAL STATEMENT

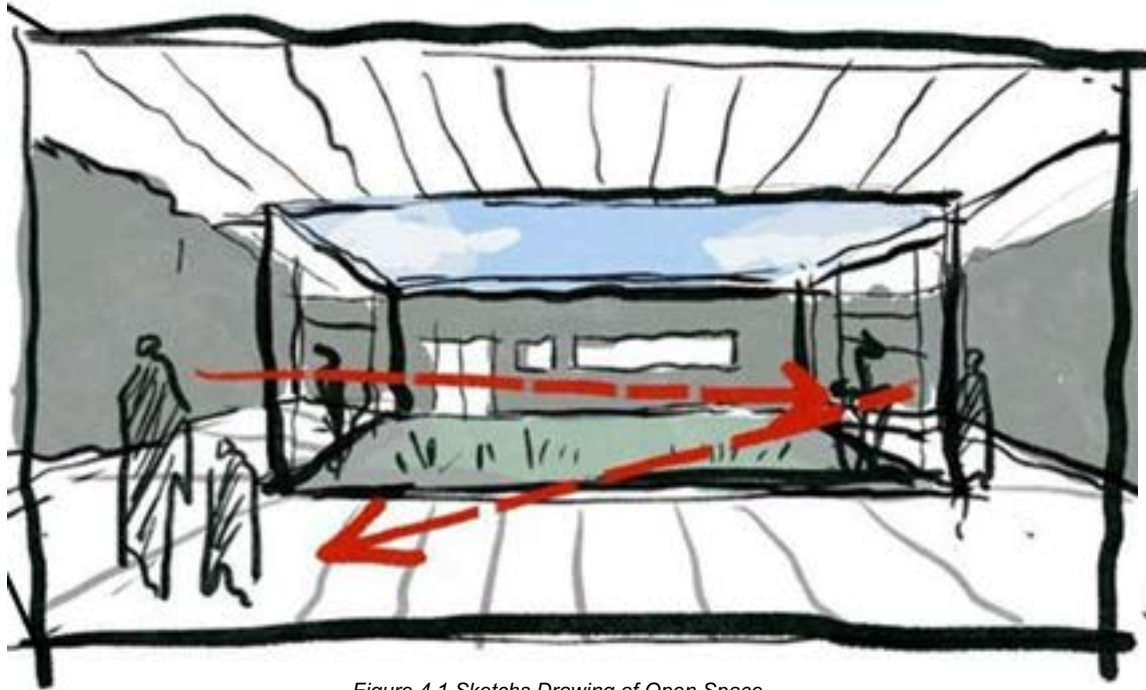


Figure 4.1 Sketches Drawing of Open Space
Source : Author, 2022

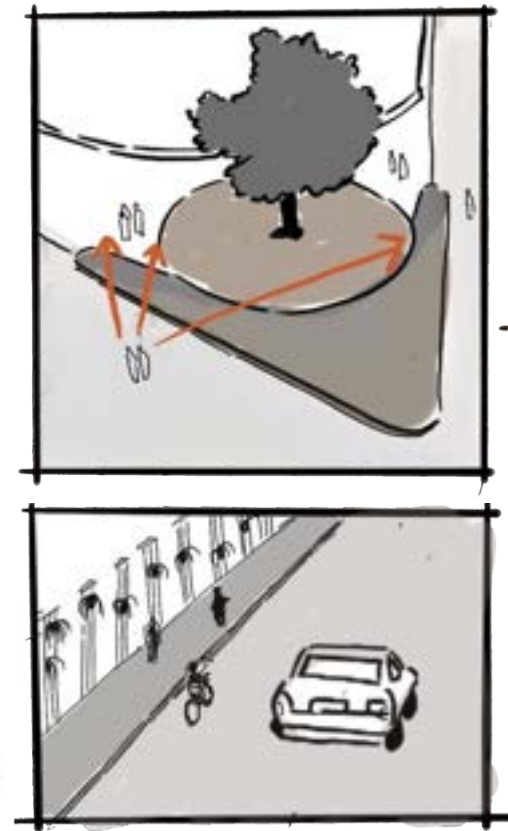


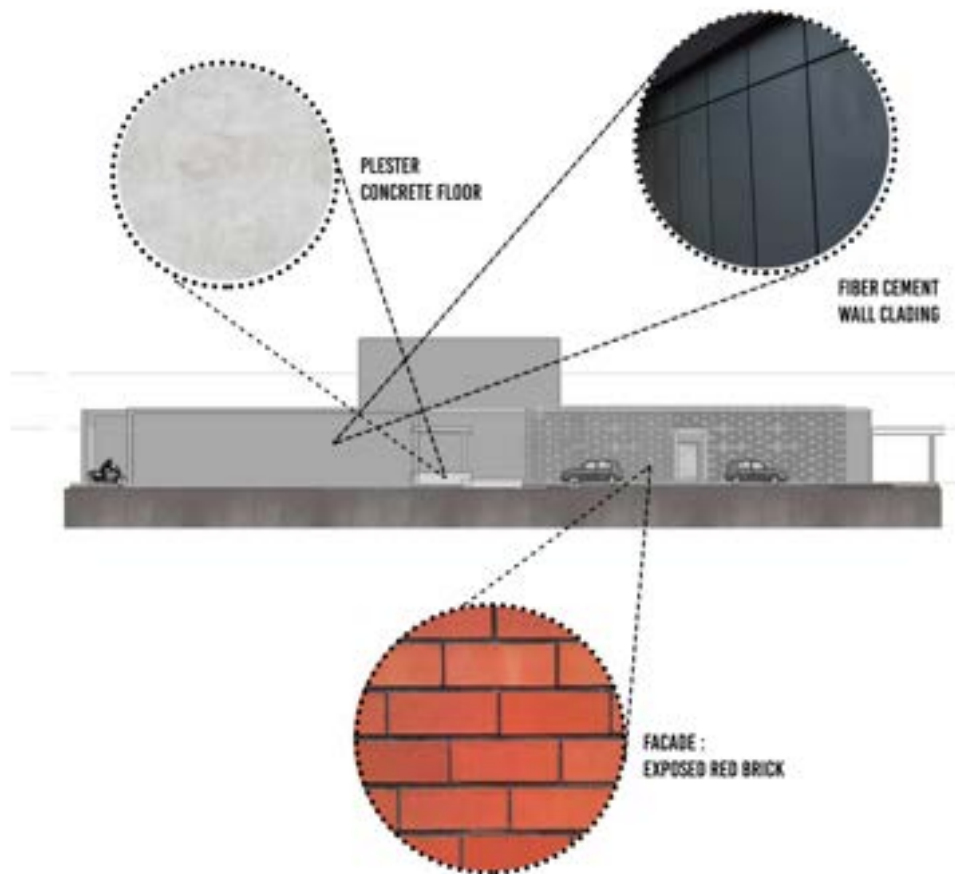
Figure 4.2 and 4.3. Sketches of Visibility and Barrier
Source : Author

1.1 COLLECTIVE SPACE : OPEN GREEN SPACE

Social interaction is fundamental component to maintain a sense of culture and well being. Many varieties of visual connections should allow the deaf students to view public space from multiple vantage points. It functions for see other movement, allow the interactions. There is an openspace in the middle of the buildingm it is can be seen from the use of curved elementsinside the building. The arrangement of the seatsform a circle to increase collectivity and help the visual awareness.

1.2 PROMOTE VISUAL AWARENESS IN CONNECTION

Inside buildings, wide opening allowed deaf individuals to see other in social situations. This is for the visual connection, as we know normally people sight radius is about 6 meters. By Deafspace Design Guidelines, we should implemented openings between room interior and exterior that designed at the level of privacy. The other visual connection can be seen of the siteplan design. The images () show how the fork allow visual awareness but still has function as road divider.



1.3 MATERIAL CHOSEN

The openness by materials can be achieved by knowing type of materials itself. The transparency materials have many kind of types. The figure () have different clearness even they are glass. The other things is the choosen of colors by materials.

The design of building must have different color. Designer can achieved this idea by choose materials and let their expose color give the different color as the figure (). This idea is fundamental because, deaf individuals need visual barrier.

However, care should be given to use materials that have the appropriate degree of relactivity as highly reflective surfaces can create undersired conditions, such as glare and visual clutter.



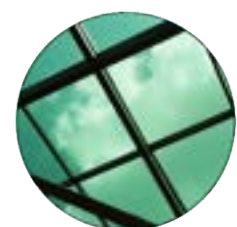
Laminated Glass



Frosted Glass



Clear Glass



Tinted Glass

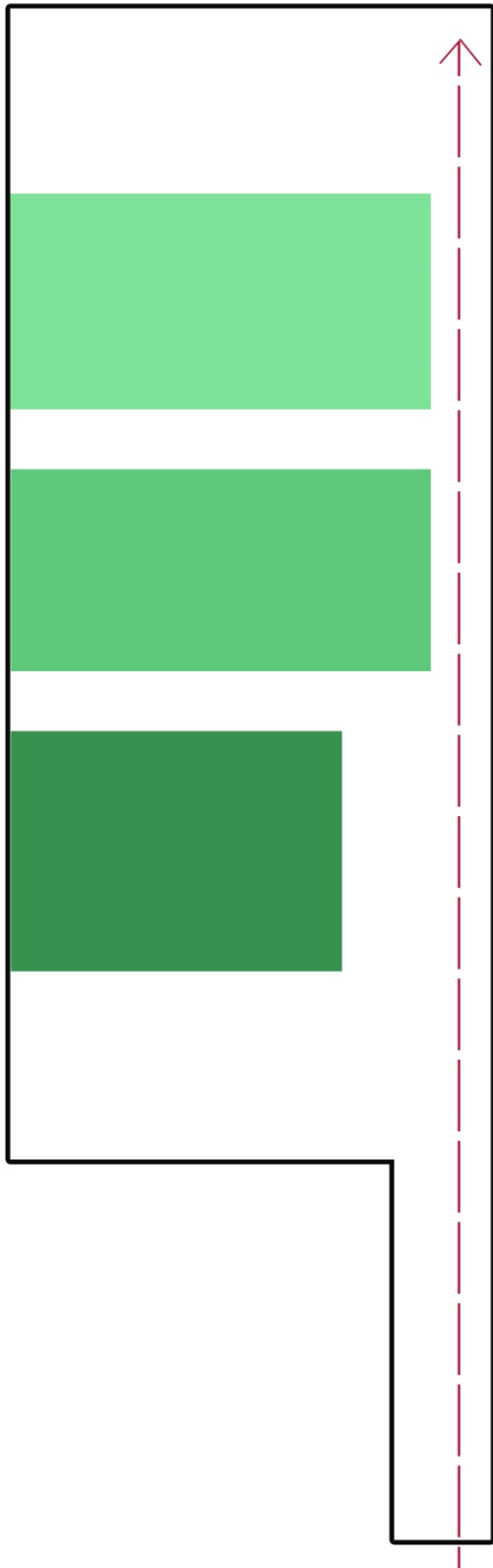
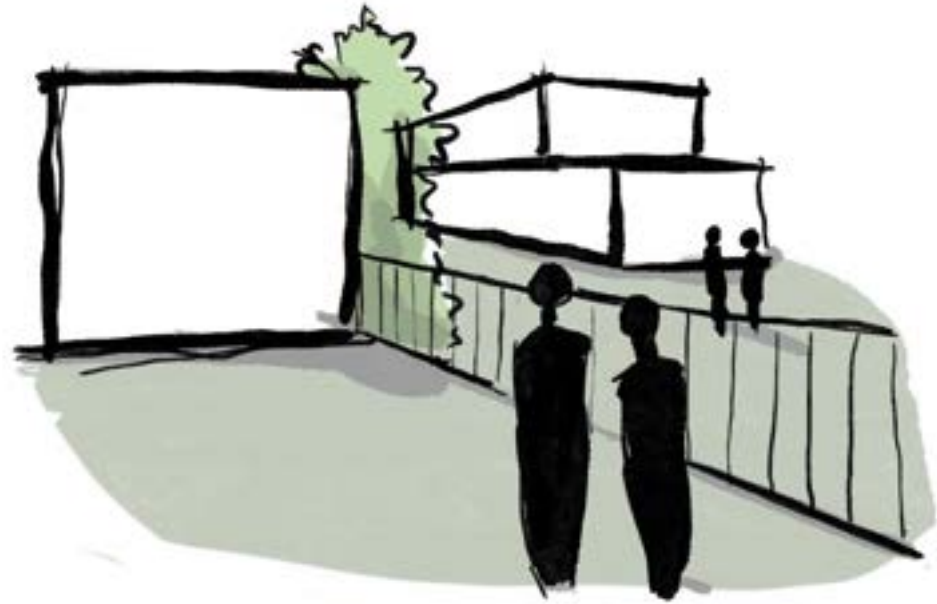


Figure 4.4 Sketch of Perspective in Scenario 1
Source : Author

SCENARIO 1

MENYEBAR DAN ORGANIK

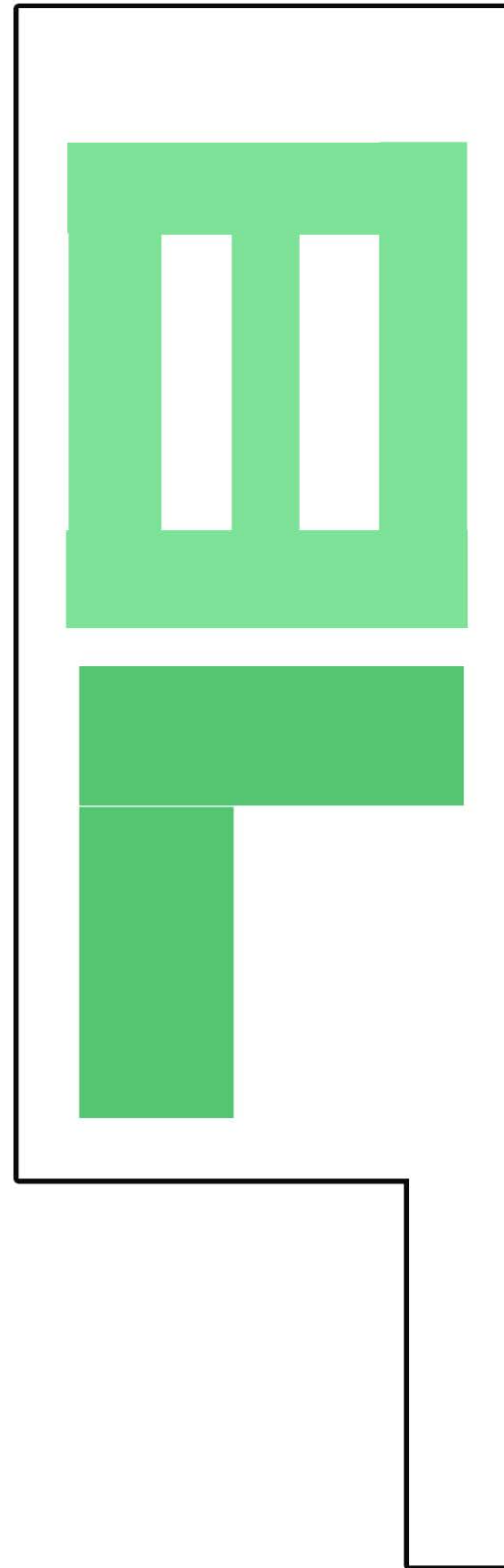
The siteplan is the estuary of ideas from each concept that has studied. In its implementation, a building requires a strong idea in order to explain the concept to its users. The first idea started from 4 buildings in one area. This mass is divided into 3 by its function, the general function, the special function of the brothers, and the special function of the brothers. In form modification, the design refers to the circular principle. with two fields in the ikhwan and akhwat rooms. The field serves as an open arena and sports venue. The general functions described are a mosque, the head office, and the house of the kiai. This public place will be easily passed by general visitors or prospective new students who will register. This concept uses a more diffuse and organic design, thus allowing the creation of new spaces that are free without the need for dictation from the architect.



Figure 4.5 Sketch of Perspective in Scenario 2
Source : Author

SCENARIO 2 TERPUSAT

The second site plan is a centralized design. Each mass has its own center. The advantage of this design is the visual ease of access from any angle. This will be proven through depthmap simulation. In addition, minimizing the occurrence of acts violating the rules, because supervision by the teacher will be easier. The drawback of this design is boredom due to the shape of the building that tends to "lock up". The solution from an architectural point of view is a game of color, texture, or material that is not monotonous, this is also a visual barrier to every function of the room.



THE ADVANTAGE AND DISADVANTAGE FOR EACH ALTERNATIVE

1. Linear setting would make circulation that allows the greatest number of views. Its also allow more gathering space, because the open space more wider than the second alternative. But it has lack of barrier, which means because its straight foward, the barrier of gender community would be not clear enough. Because the barrier should made by architectural things.

2. The building has an equal chance of being 'seen' by its entrance. In this case, the positive thing is that the building has a high visibility value, but lacks privacy.

3. The mass that is divided into three seems to provide a community that lives separately but side by side. This means that with this linear form, the impression generated is not a complete house. It's just a shared area. This drawback provides a lot of free space for each of these areas that are disconnected and difficult to monitor.

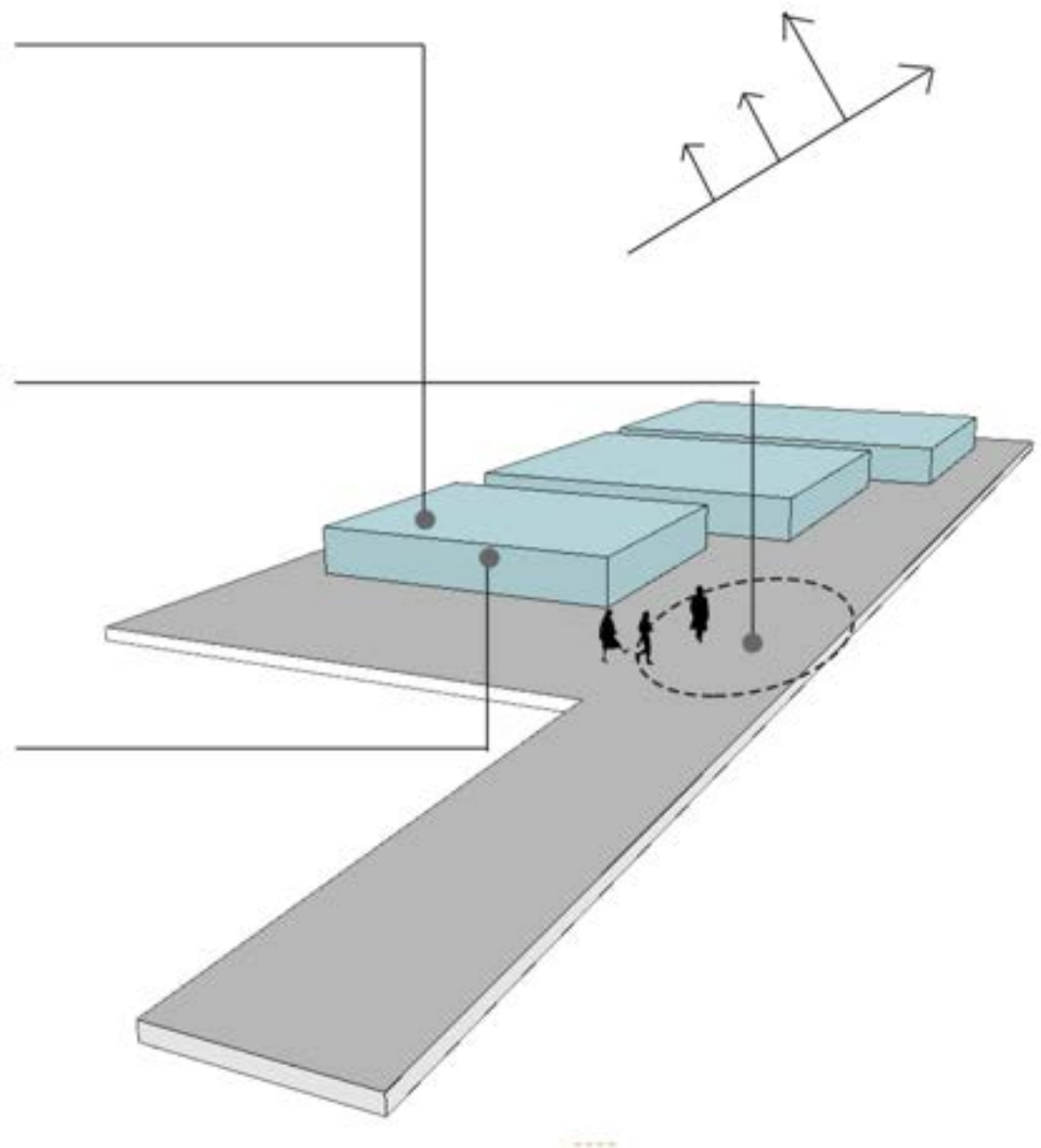


Figure 4.6 Mass Diagram
Source : Author

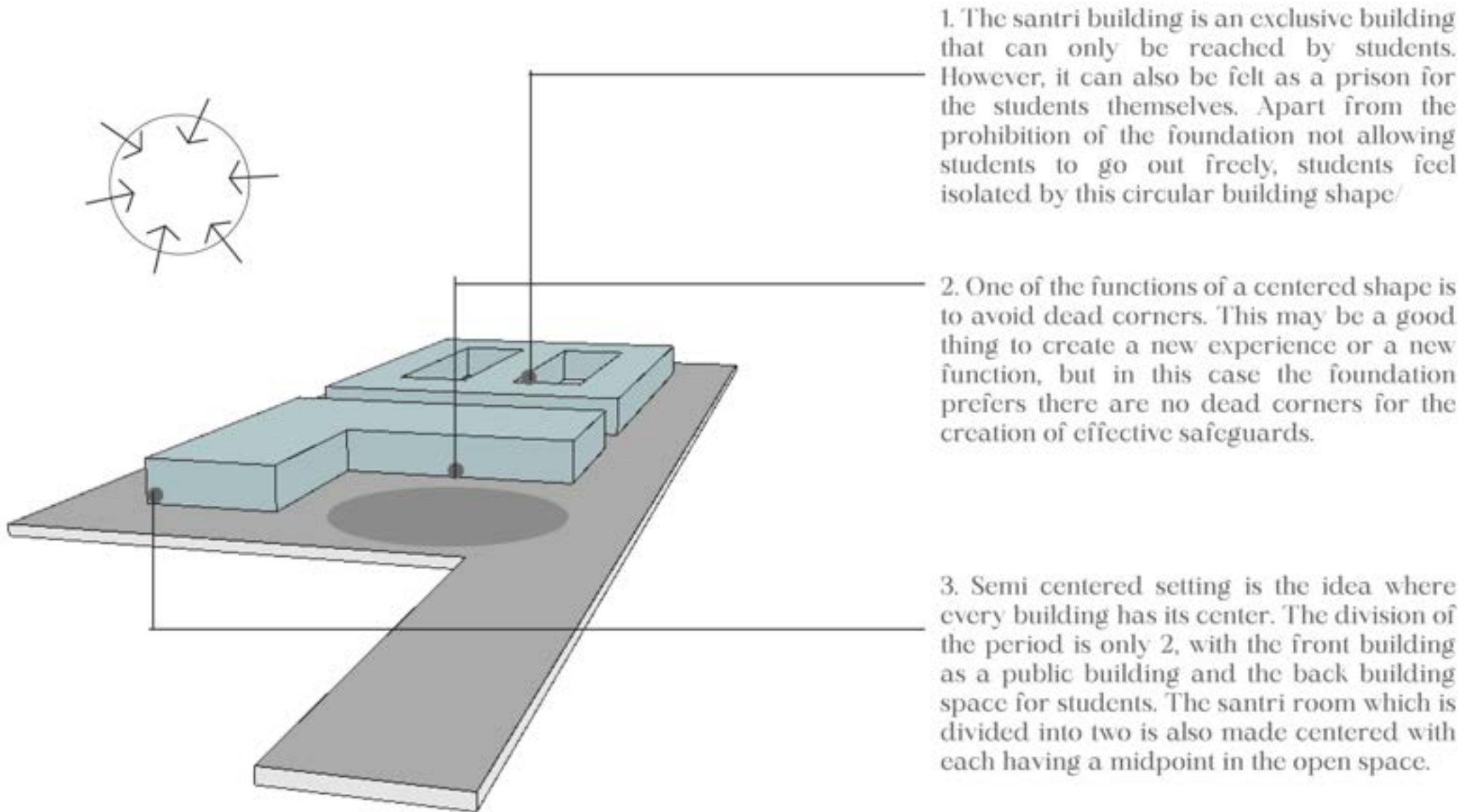


Figure 4.7 Mass Diagram
Source : Author

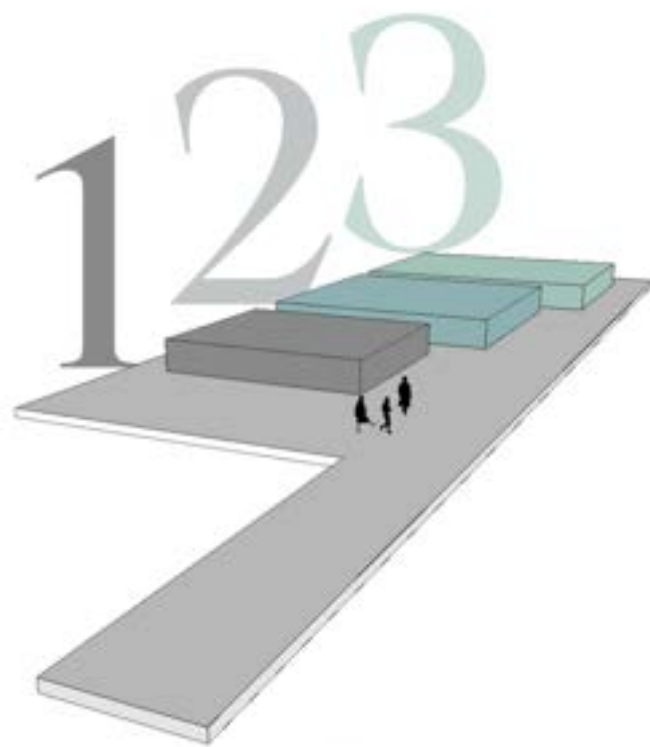


Figure 4.8 Mass Diagram
Source : Author

Each number and different colors to distinguish each function of space commonly. The number 1 (grey color) is required to be Common Mosque, all the mass planing options give this place on the entrance. The second one (blue color) used as School Space. And last one (green color) used as Dormitory.

The figure 4.8 provide space for gathering that more wider than the second option. The relocate of side free space on second option change into the center space.

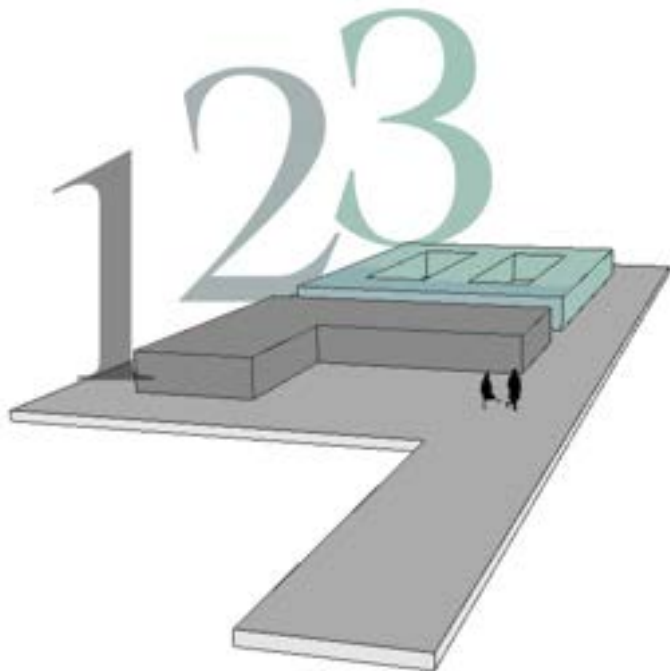
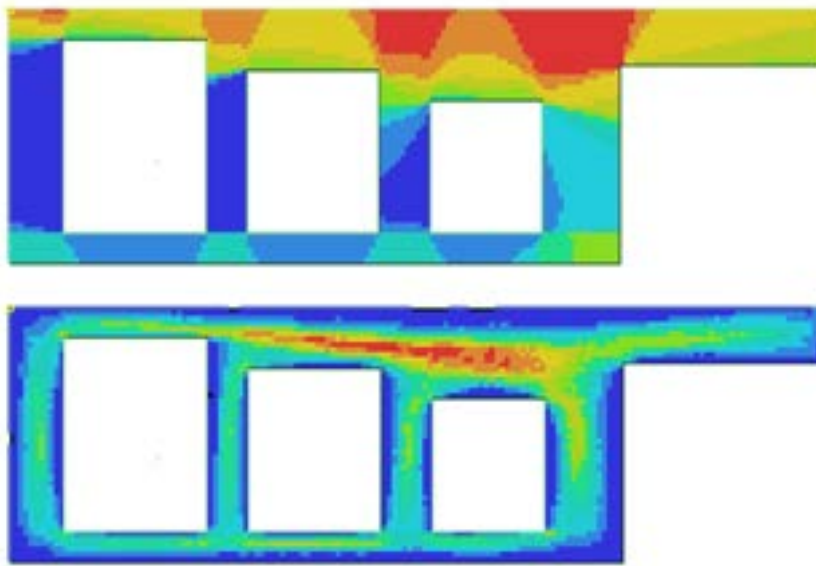
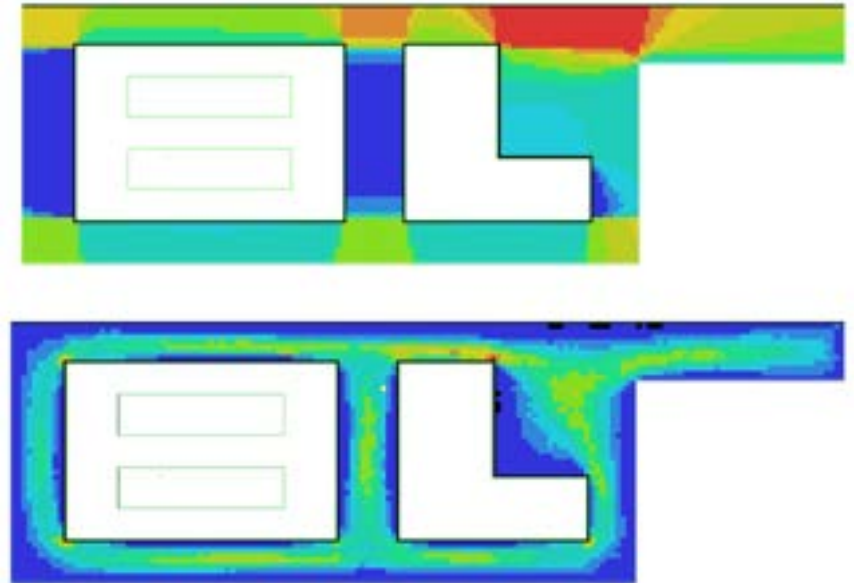


Figure 4.9 Mass Diagram
Source : Author



Alternative 1



Alternative 2

Based on the depthmap simulation, image A is the result of the connectivity graph and image B is the graph of the Point Gate. It shows that Alternative 1 has a maximum value of 2466 and an average of 1386, while Alternative 2 has a maximum value of 2100 with an average value of 1197. Both have values that are not too far apart. From the graph, indeed Alternative 1 has two areas with the best connectivity (red color) but has 3 lowest connectivity areas (blue color). While the gates value itself, alternative 1 has a better open space than alternative 2. From these two results, referring to space requirements, area needs, alternative 2 is chosen which has a smaller risk of narrow alleys, and is more compact in mass.

	Minimum	Average	Maximum
Connectivity Alt. 1	414	1386.37	2466
Connectivity Alt. 2	514	1197.451	2100
Gate Counts 1	1	105.939	370
Gate Counts 2	1	129.659	524

The table beside shows that the two alternatives are not far in value. But in land use we choose the most effective area with the result that alternative 2 is the right choice.

DEVELOPMENT OF CONCEPT

Spatial Programming

From the two alternatives on the previous page, alternative 1 was chosen as a form of building mass. In designing Spatial Connection we divided into two parts, mass with general and specific accessibility. Figure () shows that the connectivity to each room is centered by a green field in the middle of the building.

Canteen is located in the middle of the era as well as being a barrier between the female santri area and the male santri area. The mosque can be accessed by both areas, but female students can only fill the second floor of the mosque.

To maintain connectivity between rooms, a corridor was created that surrounds each room. The corridor is a barrier between green space (green field) and clean space.

Public spaces consist of mosques and school lobbies. Access to the mosque (Hall) can be accessed from the lobby or directly from the front yard of the school. This public space is accessed by parents or guests who want to visit

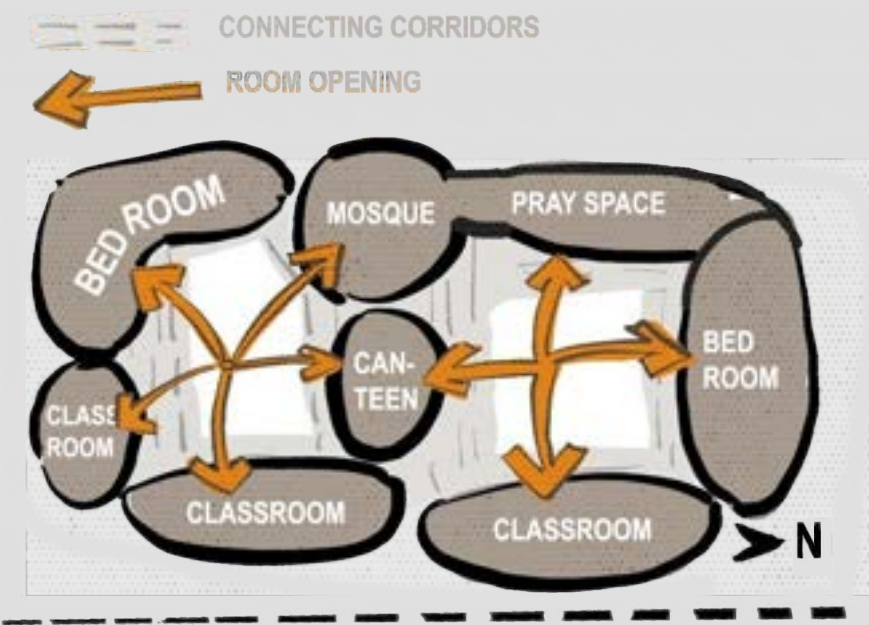
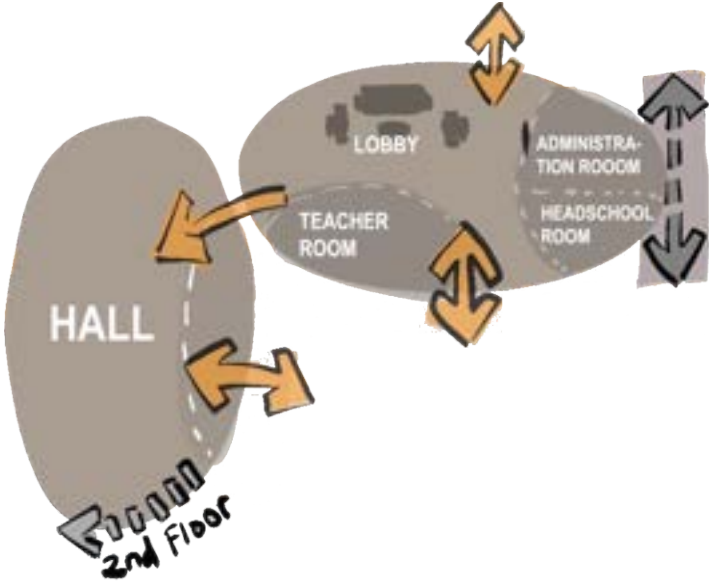


Figure 4.10 Mass Diagram
Source : Author

SITEPLAN

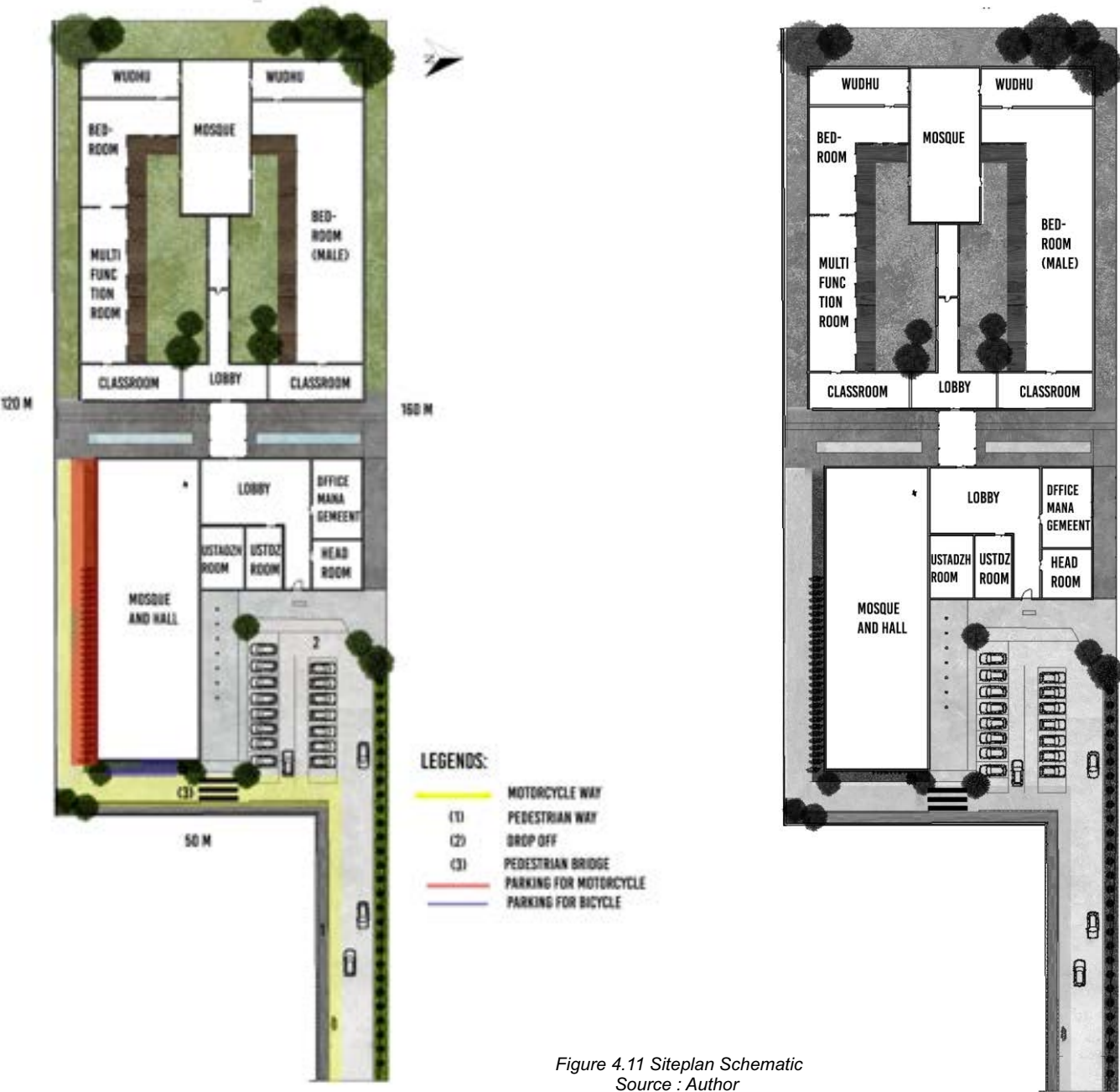
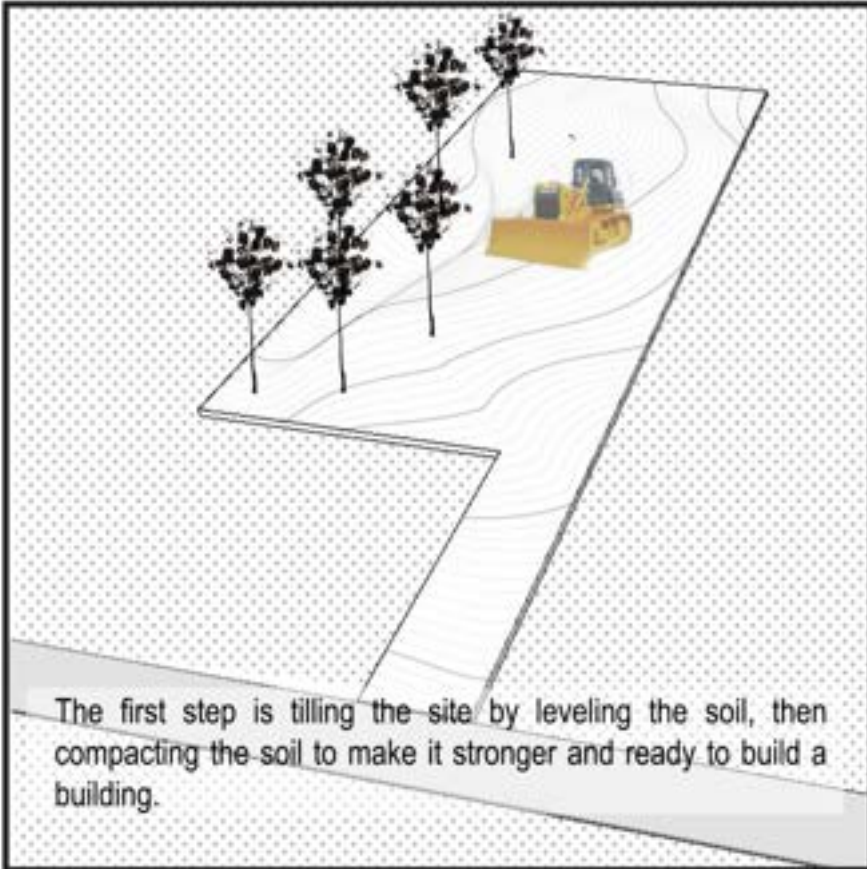
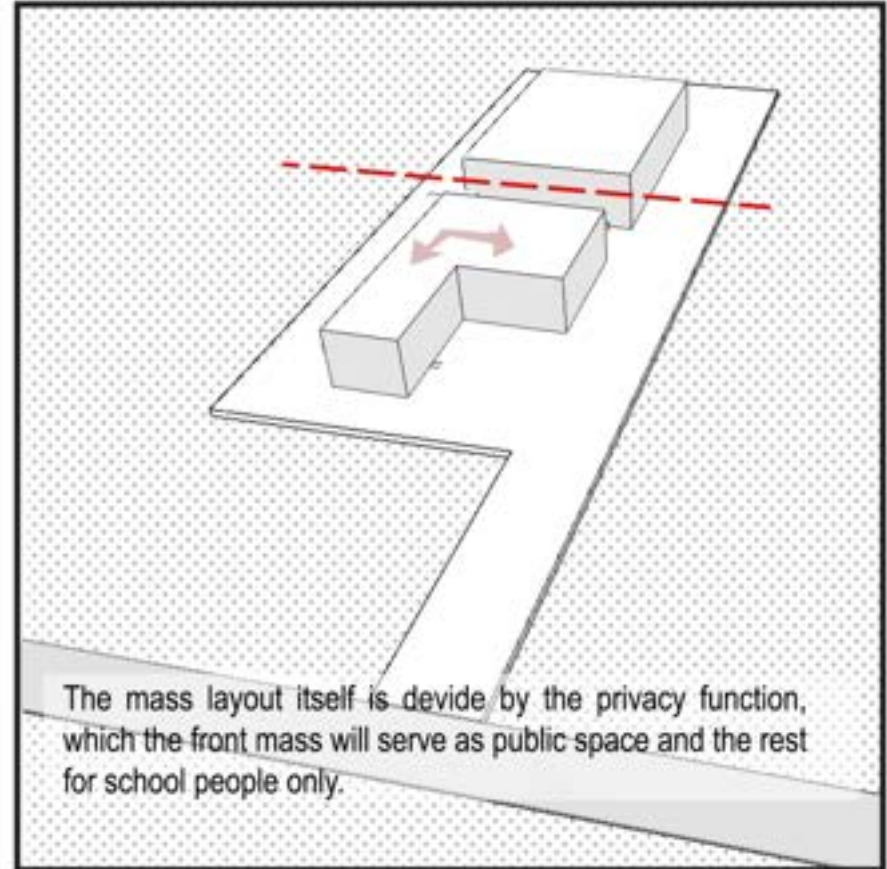
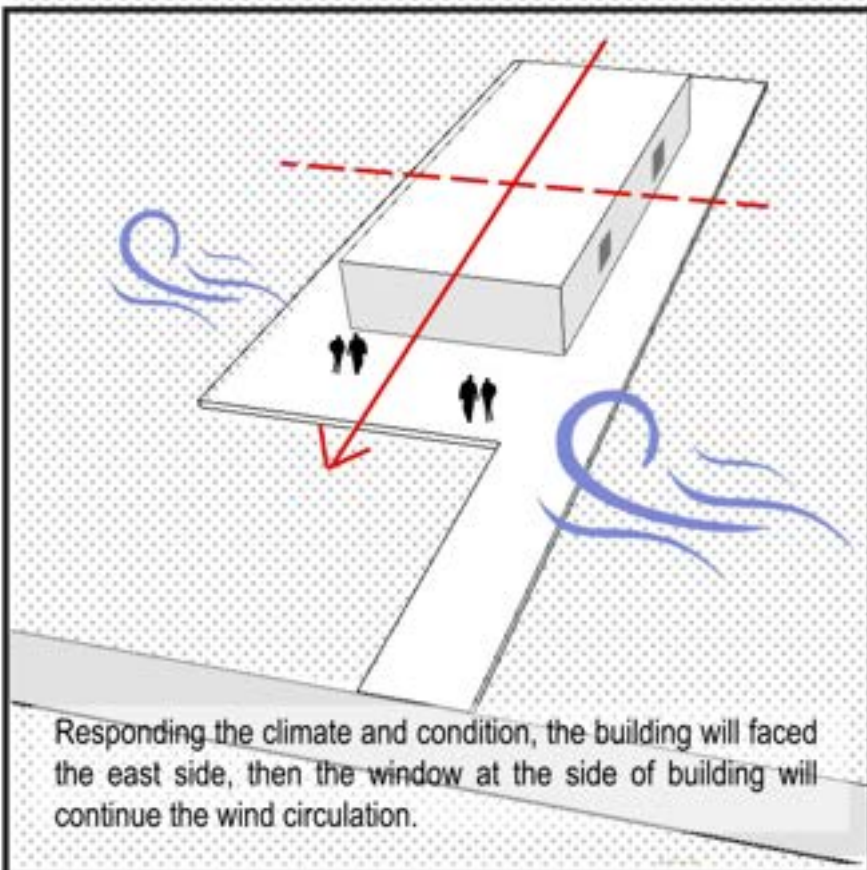
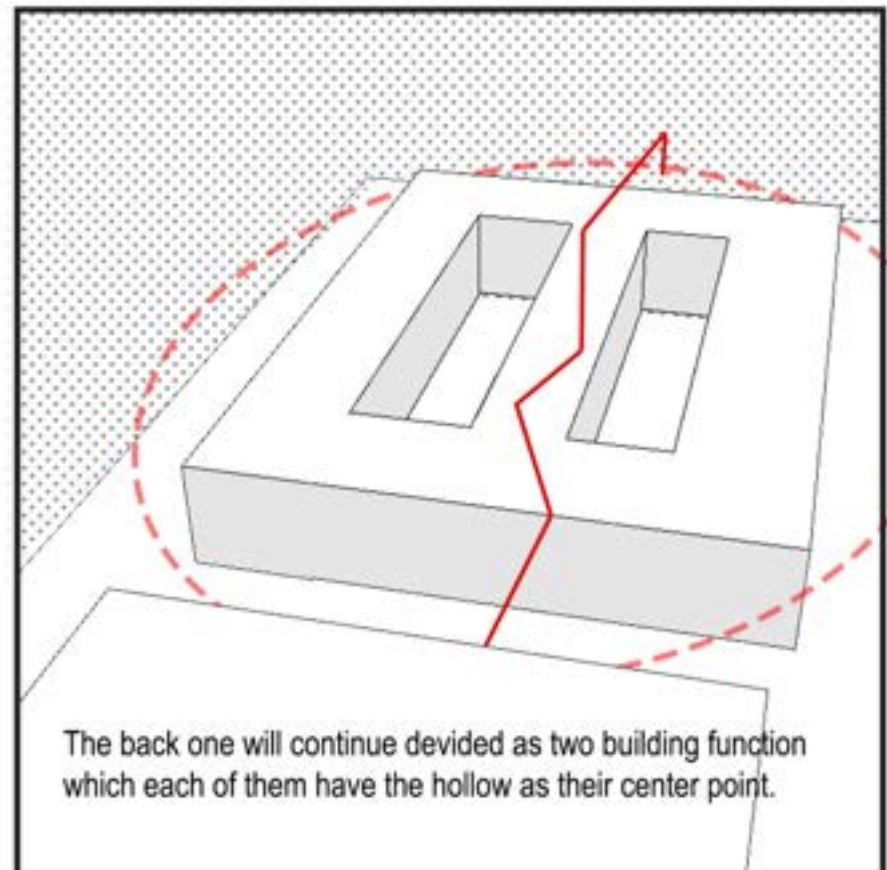
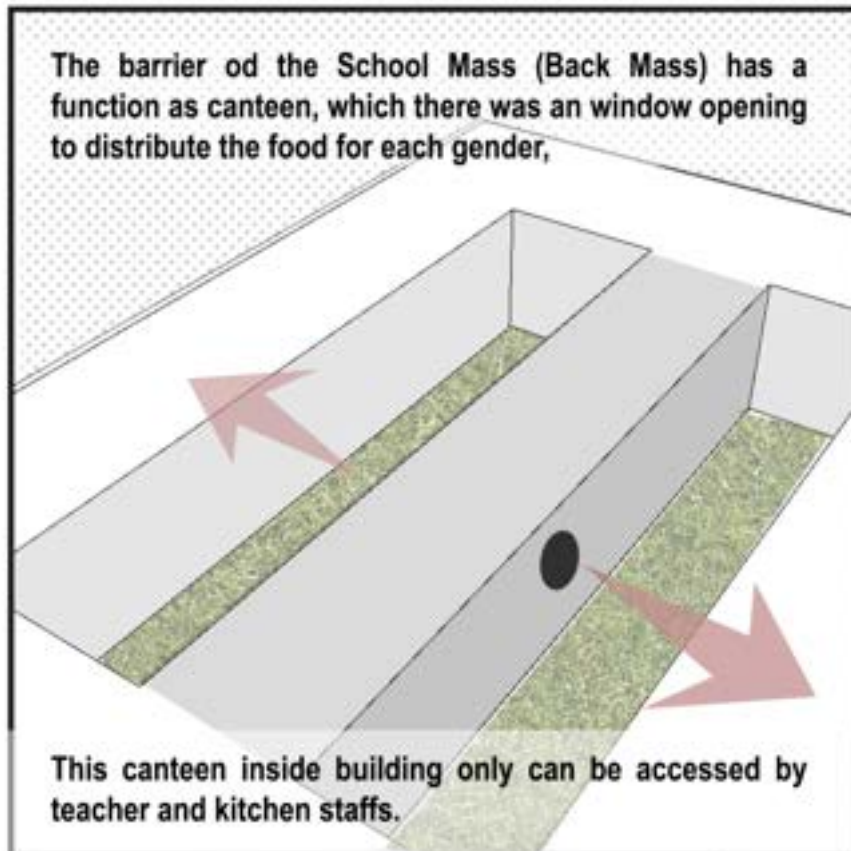
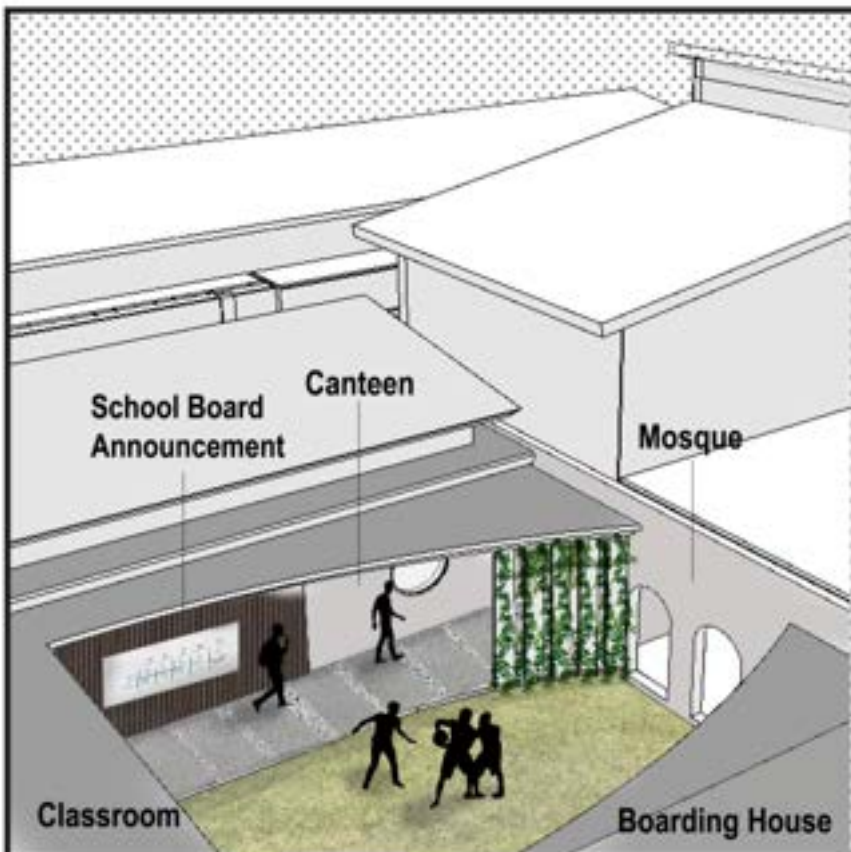
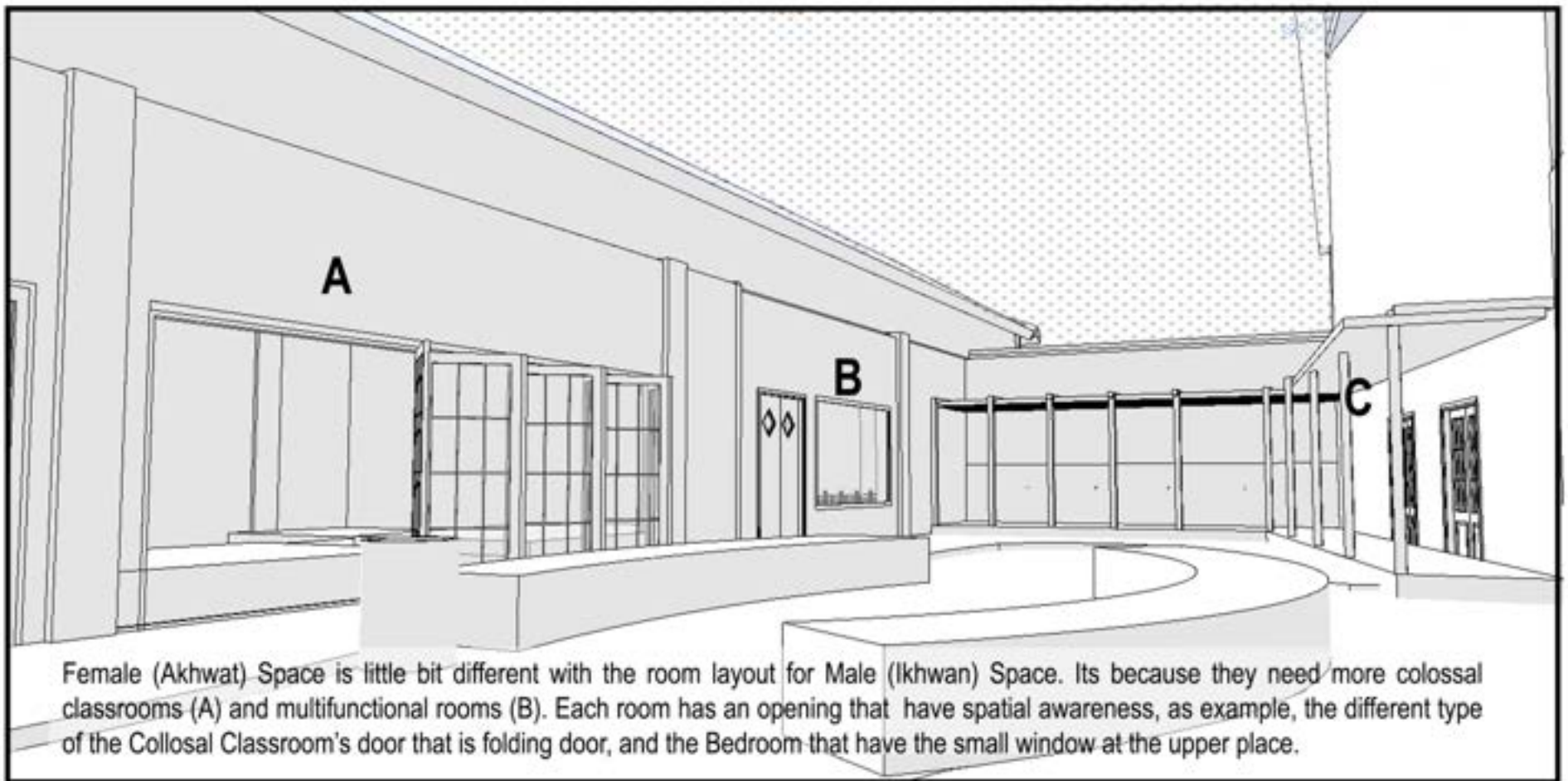
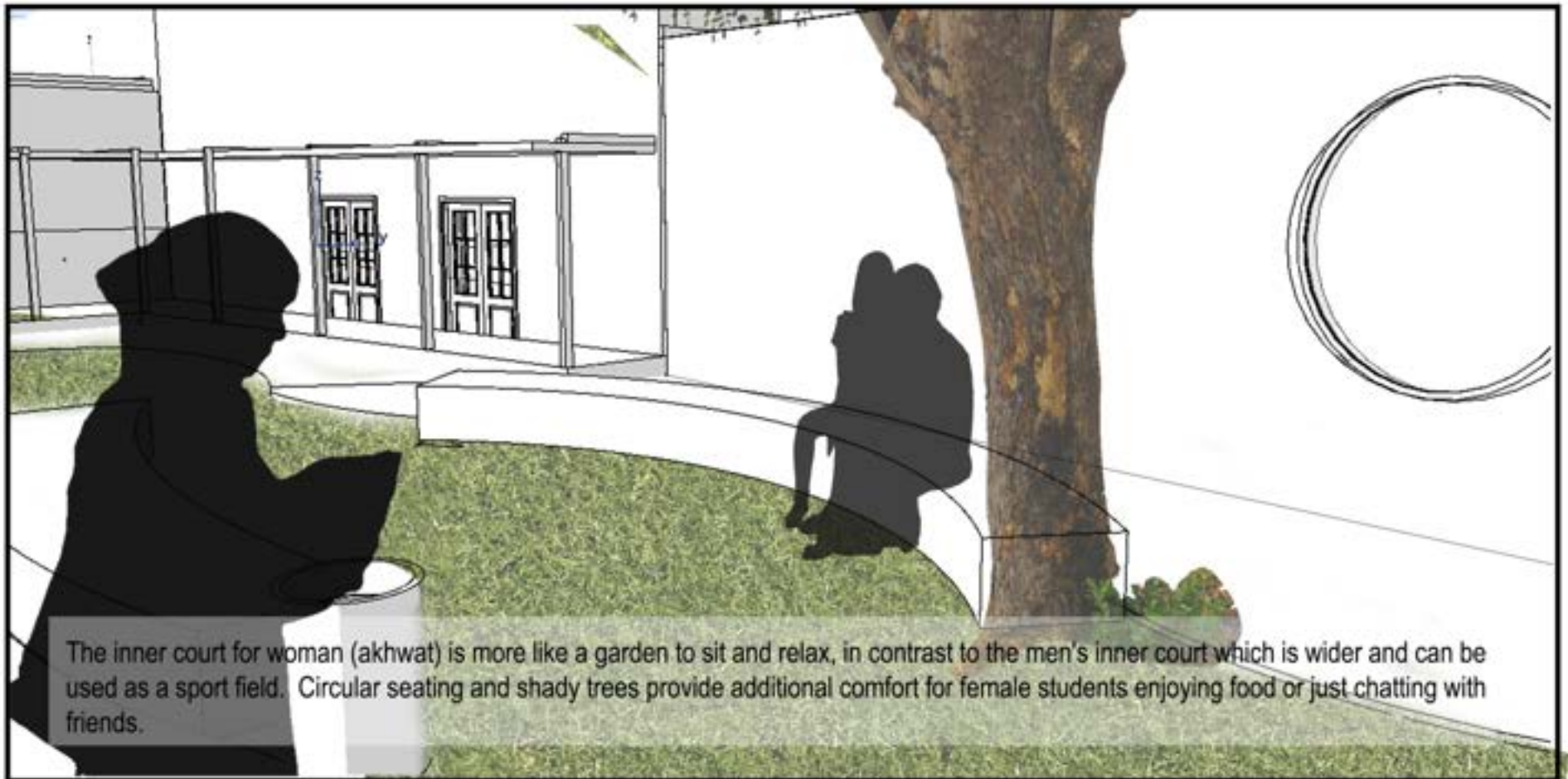


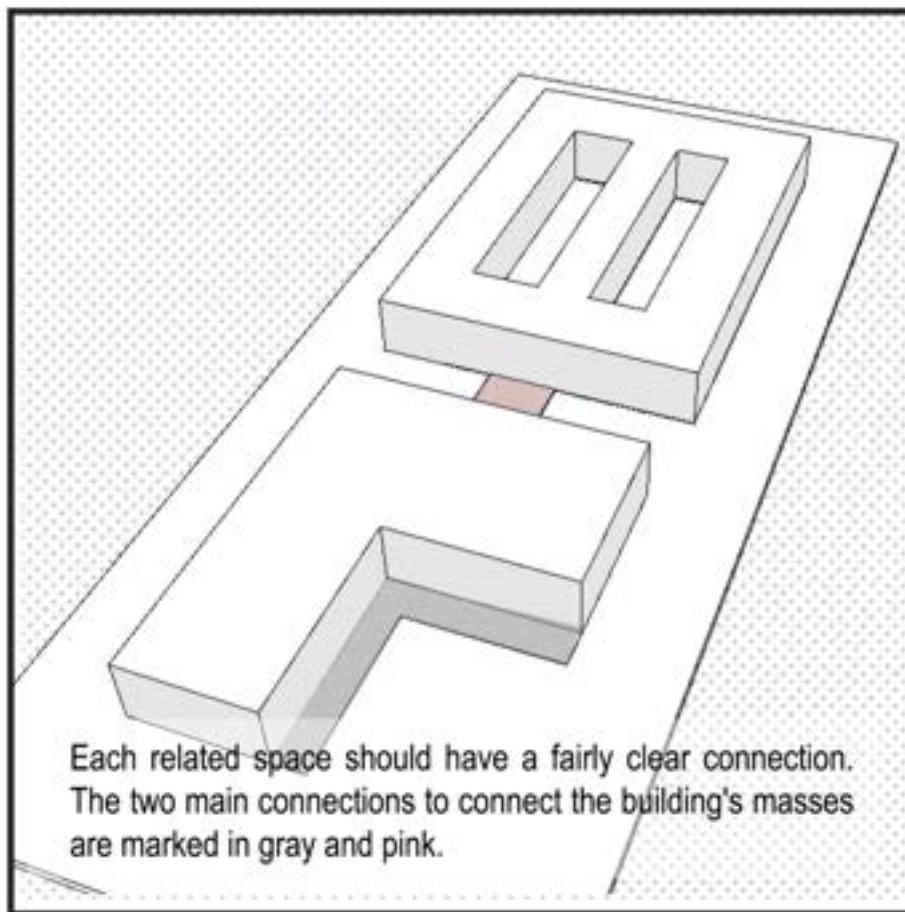
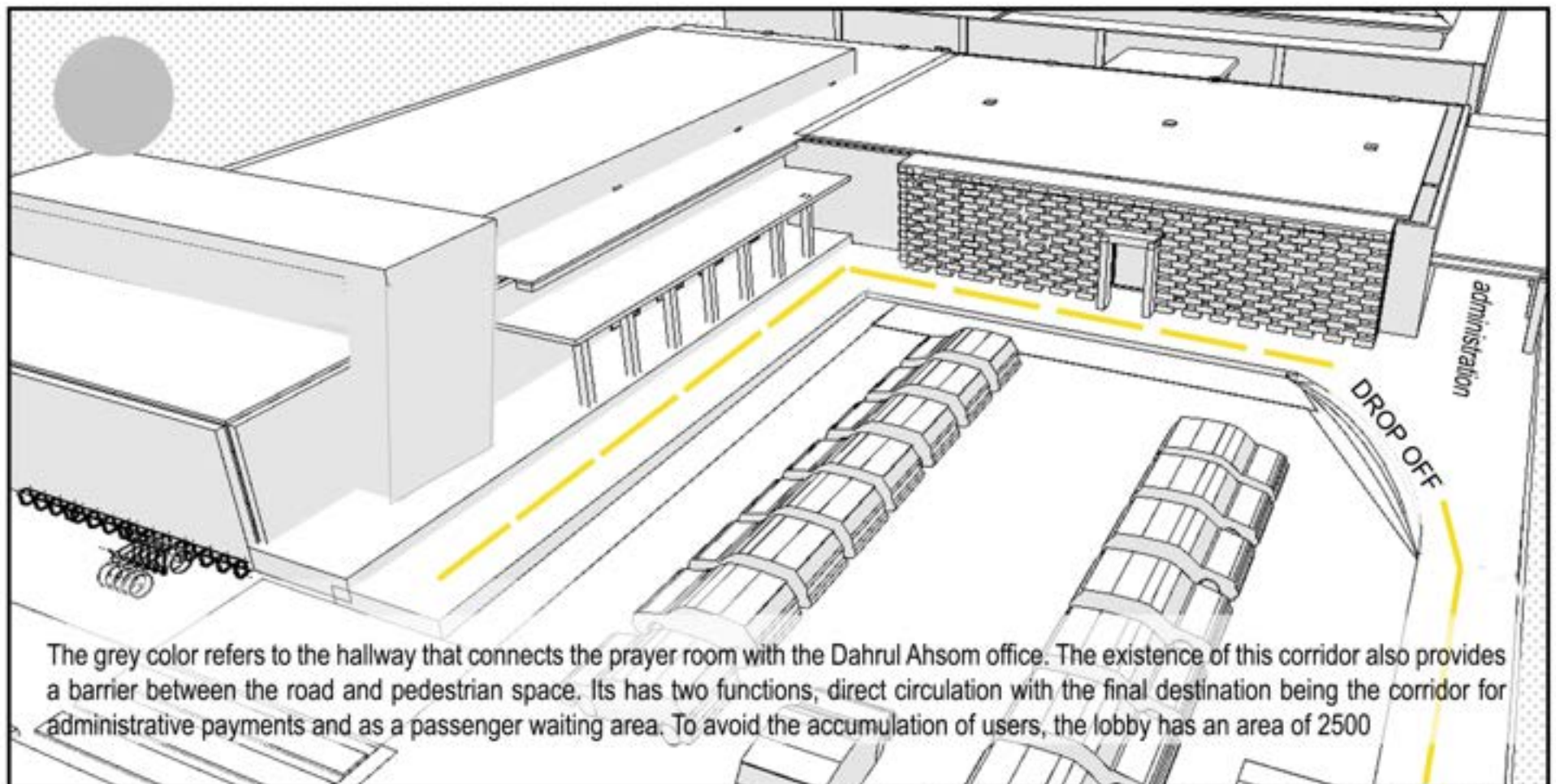
Figure 4.11 Siteplan Schematic
Source : Author

STORYLINE









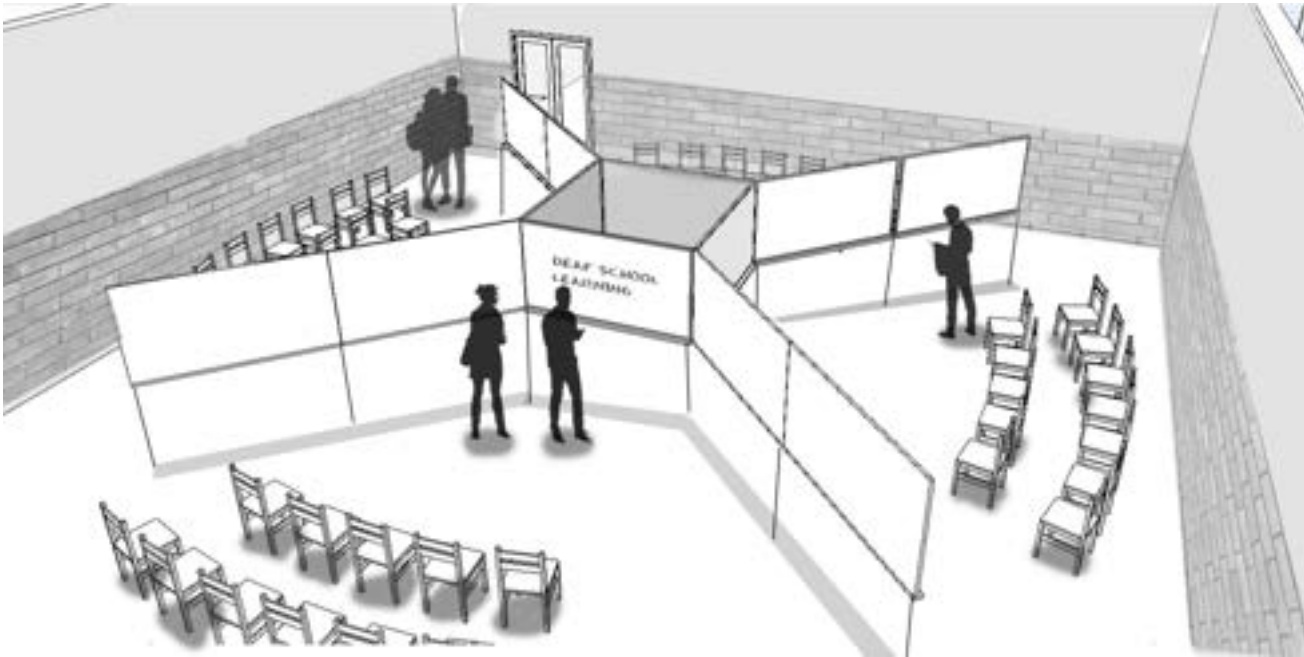


Figure 4.12 Chair and Board Layout in Classroom
Source : Author



1. NON DISTRACTION CLASSROOM CONCEPT

The eyes of Deaf people is the key of understanding and communicating. The classroom is part vital part of school environment, it consist of terms, situations, and conditions that can affecting the learning process. Bagi siswa tunarungu, ruang kelas yang nyaman secara visual merupakan kunci keberhasilan informasi dapat disampaikan. Dalam hal ini, konsep yang tepat untuk ruang kelas pada Dahrul Ahsom Boarding School adalah open layout room yang dapat mengakomodasi 4 kelas dalam setiap ruangan (Abu Bakar, Umar, Usman, dan Ali). Tentu saja untuk mencapai kenyamanan visual diperlukan penataan dan perhitungan space and proximity yang tepat. Desain ruang kelas pada ruangan seluas 12x12 ini dapat memuat 10-12 siswa dalam setiap kelasnya (12 adalah jumlah maksimum siswa tunarungu menurut DITPLB, 2006) . Proximity peletakan alat bantu belajar sebagai berikut : (1) jarak papan tulis 3,3 meter (Neufert, Architect's Data) dan jarak per baris adalah 8,6-1 meter (Neufert, Architect's Data).

The basic principle of building a classroom is with a semi circle, U shaped Layout (Deafspace Guidelines). In this case, the architect modified the U-shaped into two lines because of the quantity needs of students. The U shaped with two rows is the ideal row in any of these classes. This adapted layout also enables the students to read teacher lips or facial expressions.

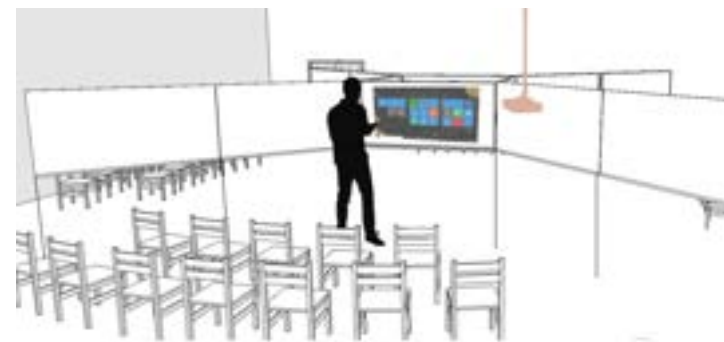
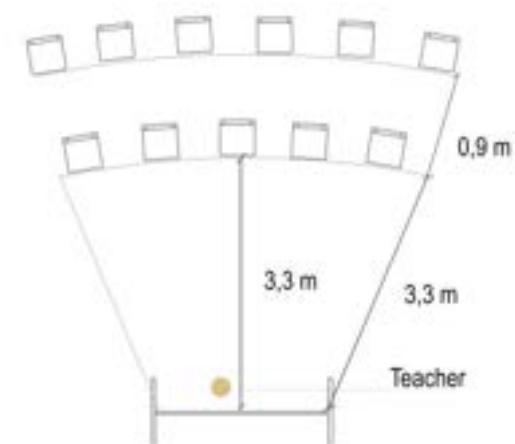


Figure 4.13 Chair and Board Layout Dimension
Source : Author

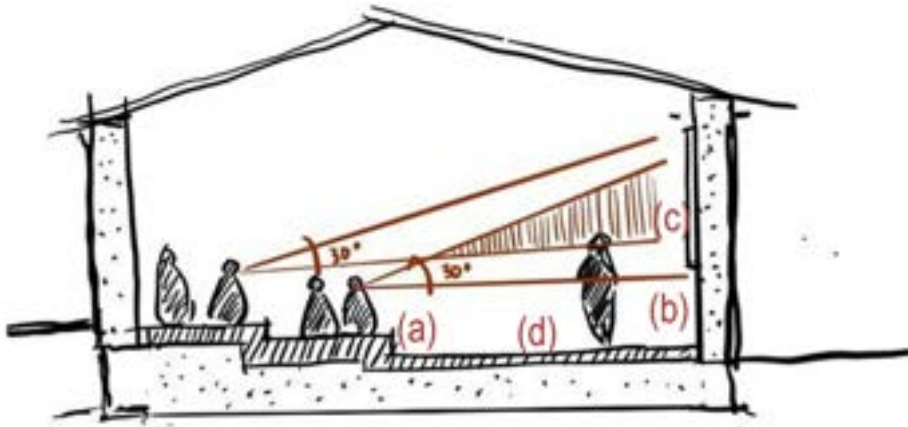


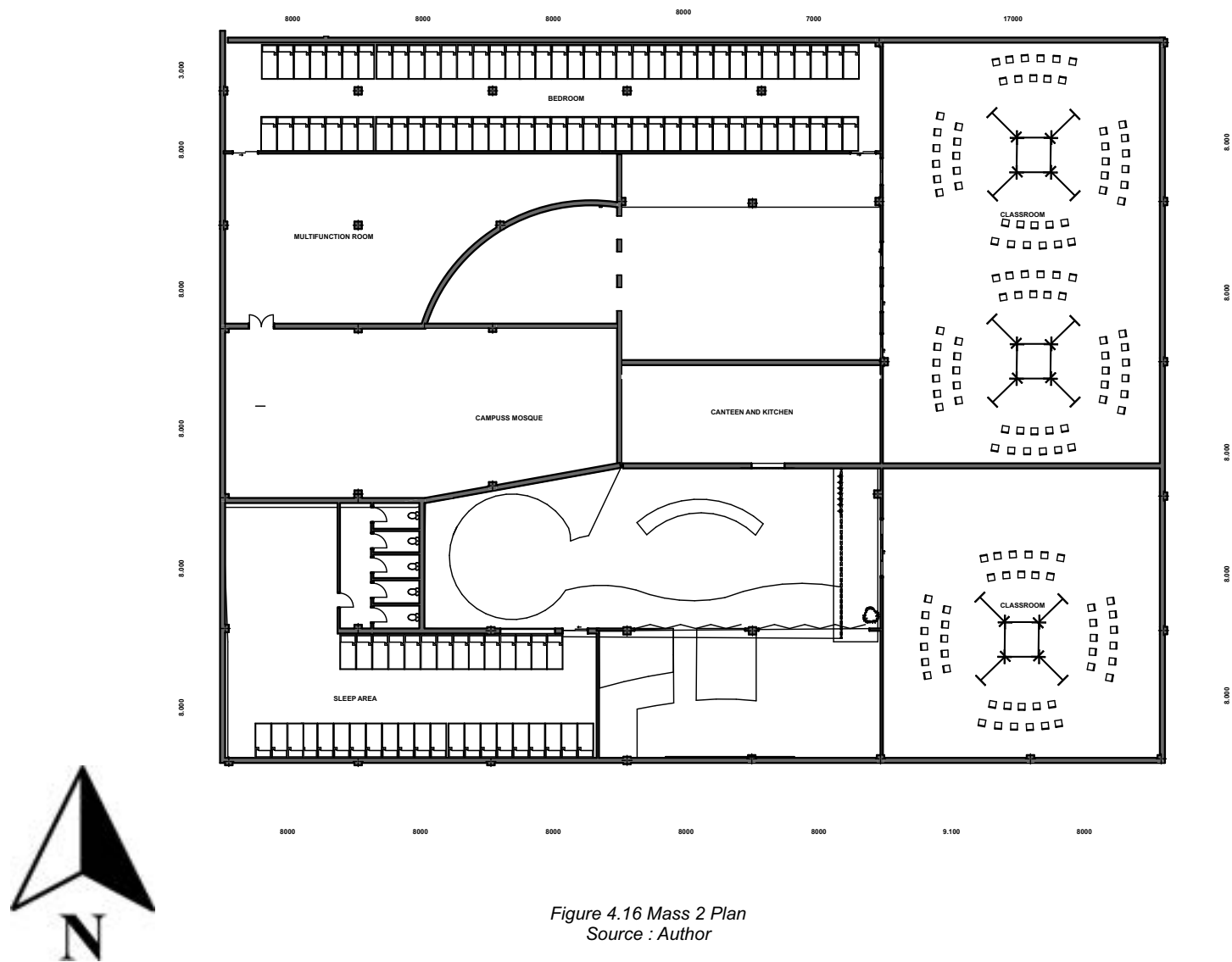
Figure 4.14 Multifunction Room Dimension
Source : Author

The picture above is a measurement according to anthropometric and ergonomics of the human body. (a) Shows the height of the stage which is 15 cm. The standard ladder height is 15-19 cm (SNI) but because this ladder is made for the age group of 10-21 years, the smallest value is chosen for the comfort of the children. (b) Shows the height of the blackboard according to (d) the distance between the board and the child is 330 cm. and the maximum angle of view, which is 30 degrees, the height of the blackboard from the floor area is 587 cm with a rounding of 690 cm and the height of the board reaches 1 meter which is the intersection of the two different heights of the stage.

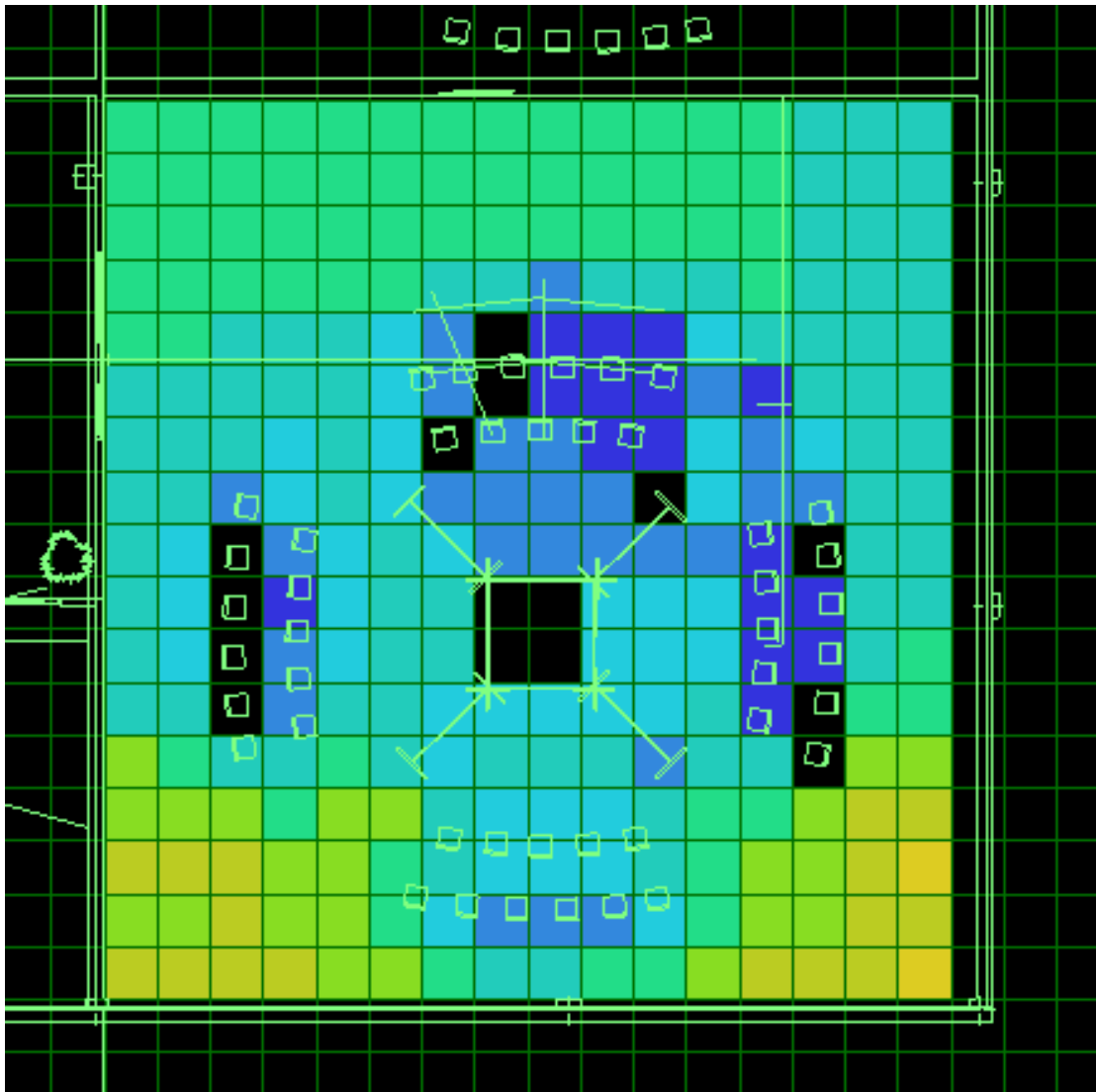


Figure 4.15 Perspective of Multifunction Room
Source : Author

1.1 CLASSROOM PLAN WITH HARVARD-MODE ARRANGEMENT



DEPTHMAP SIMULATION THRU CLASSROOM CONNECTION



The classroom arrangement was designing with this kind of layout which we are tested on the Space syntax depthmap, this classroom has good connectivity each other.

The green area show this place has a lot of space for gathering people. And this arrangement has good circulation connection between each class.

Figure 4.17 Depthmap Simulation of Classroom Plan
Source : Author

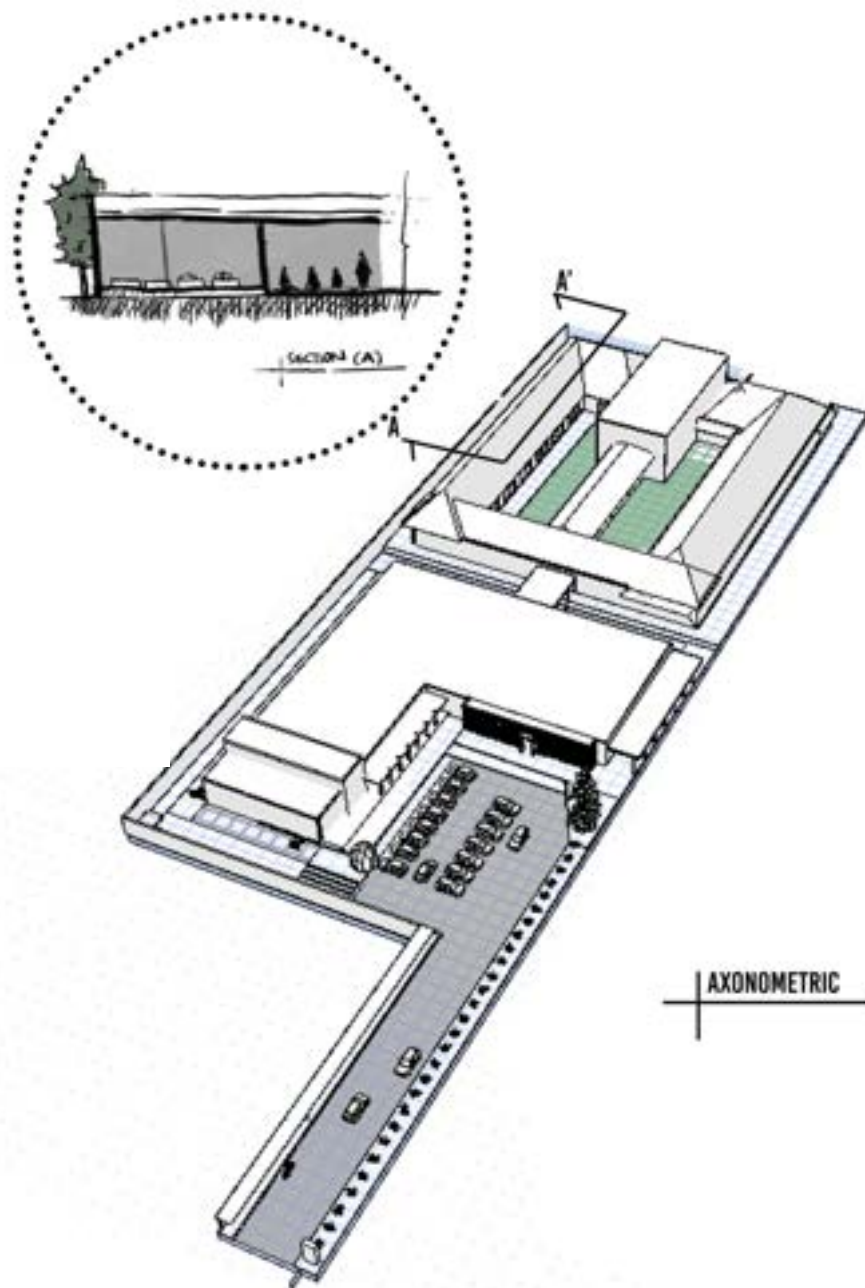
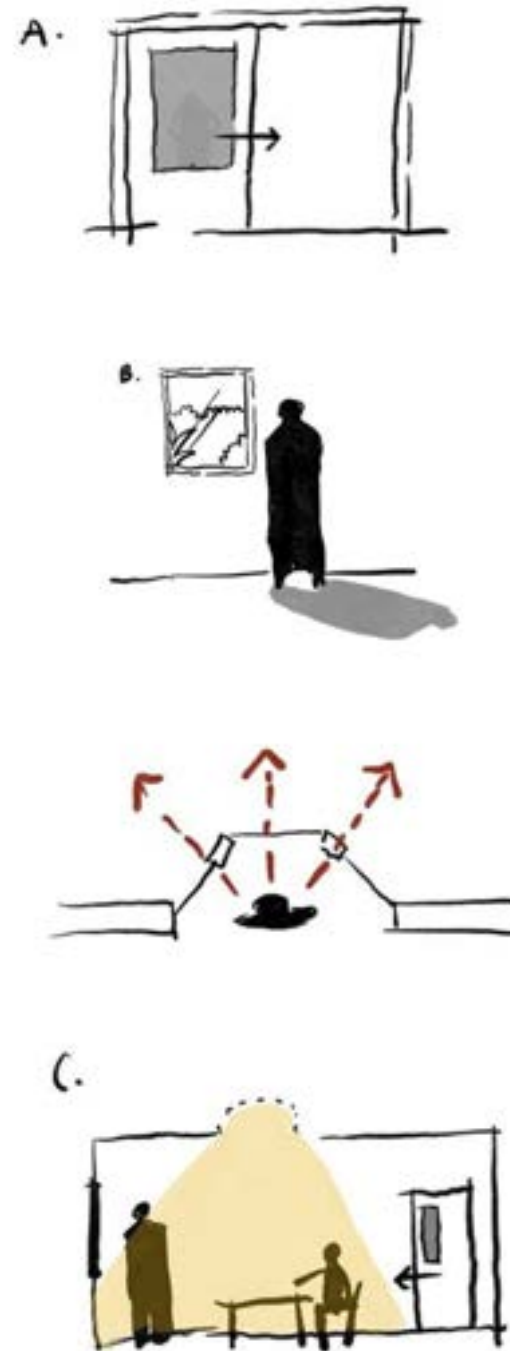


Figure 4.18 Axonometric
Source : Author



21.1 Sensory Reach of each Opening

As we know, all the building have their sense of privacy. Bedroom area as an example, is the place that has privacy from the outdoor. Its use kind of one-way window, that can block the visual view from the outdoor but can allow the indoor. The door also has their specification. Using sliding door to make mobility more easier, and have much opening while its open. Since morning until the time schedule of school activities begin, the Bedroom and multifunctional hall is open used by sliding Door (A). And when the night coming, all the door is closed and the visual awareness from only one way window. The used of Bay windows at the backside of the bedroom is for increased range of view/ Its provide visual access from the inside to the neighborhood.

2.1 Classroom Lighting

Visual awareness from the classroom is onluy located at the door. We used the door that have glazed blurry. Its because of the distraction that made by window opening. So, for change it, we used skylight and small ventilation at the classroom. Skylight is roof opening covered with translucent or transparent glass or plastic designed to admit daylight (Britania.co). The terms criteria for skylight is should got 250 lux of the light intensity (C).

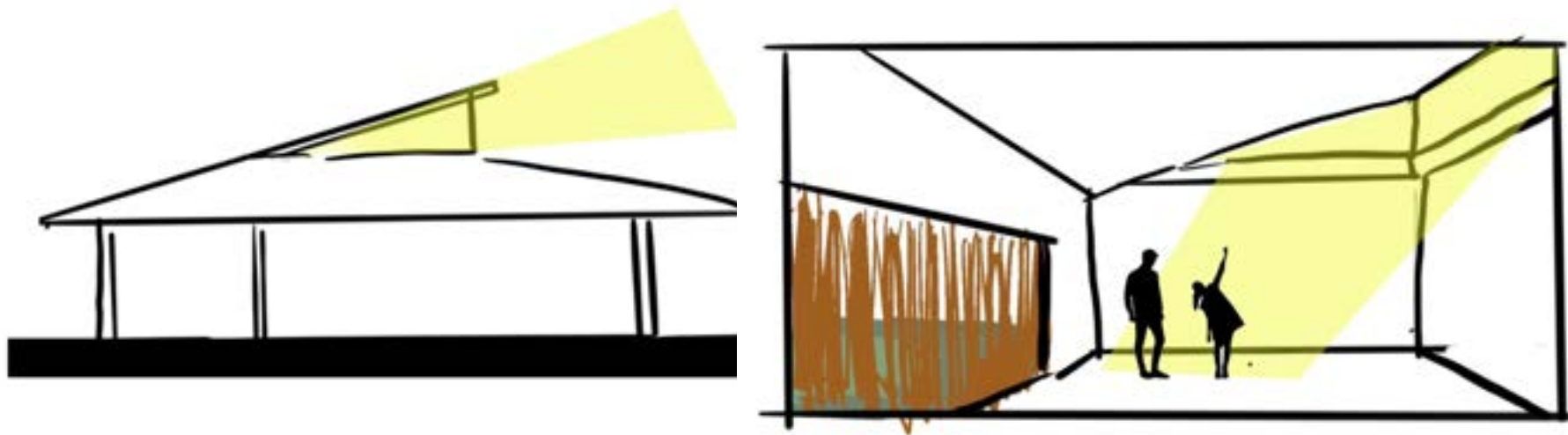


Figure 4.19 Skylight Concept Sketchs
Source : Author

1.3 CLASSROOM SKYLIGHT ROOF

The eyes of Deaf people is the key of understanding and communicating. The classroom is part vital part of school environment, it consist of terms, situations, and conditions that can affecting the learning process. Bagi siswa tunarungu, ruang kelas yang nyaman secara visual merupakan kunci keberhasilan informasi dapat disampaikan. Dalam hal ini, konsep yang tepat untuk ruang kelas pada Dahrul Ahsom Boarding School adalah open layout room yang dapat mengakomodasi 4 kelas dalam setiap ruangan (Abu Bakar, Umar, Usman, dan Ali). Tentu saja untuk mencapai kenyamanan visual diperlukan penataan dan perhitungan space and proximity yang tepat. Desain ruang kelas pada ruangan seluas 12x12 ini dapat memuat 10-12 siswa dalam setiap kelasnya (12 adalah jumlah maksimum siswa tunarungu menurut DITPLB, 2006) . Proximity peletakan alat bantu belajar sebagai berikut : (1) jarak papan tulis 3,3 meter (Neufert, Architect's Data) dan jarak per baris adalah 8,6-1 meter (Neufert, Architect's Data).

The basic principle of building classrooms is a semi circle, U shaped layout (Deafspace Guidelines). In this case the architect modified the U shaped into two lines because of the quantity needs of the students. The U shaped with two rows is the ideal row in each of these classes. This adapted layout also enables the students to read teacher's lips or facial expressions.



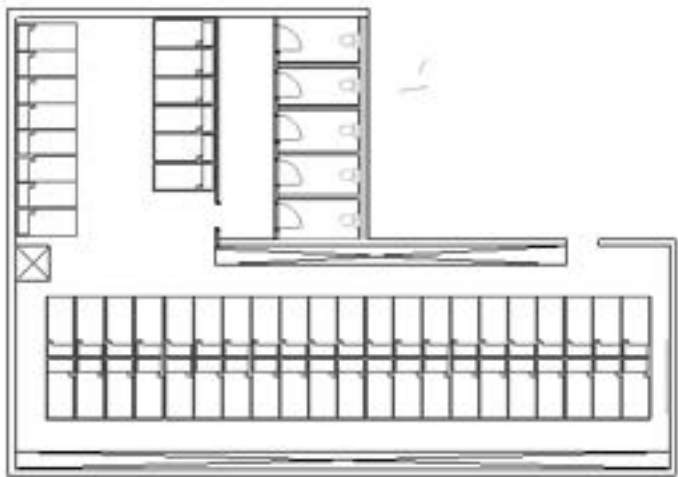
Figure 4.20 Render of Classroom View and Viesta
Source : Author

2. VISIBILITY FREE BEDROOM LAYOUT

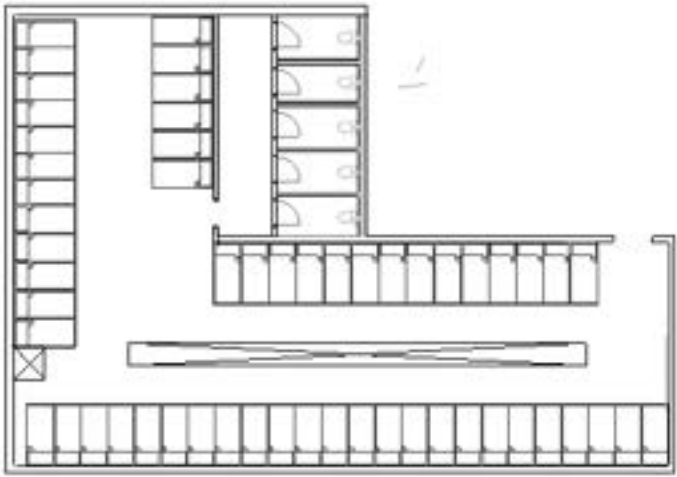


2.1 VISUAL CONNECTIVITY

The design of the room space requires that there are no objects obstructing the view. This is in accordance with the statement of the chairman of Dahrul Ahsom, namely Mr. Kiai Abu (page) that the santri supervisor (foster parents) has the task of supervising the students, including at bedtime. In this case, the architect tried to help by developing a bed layout with the least visual blocking. Two models of bed layouts can be seen in the following picture.

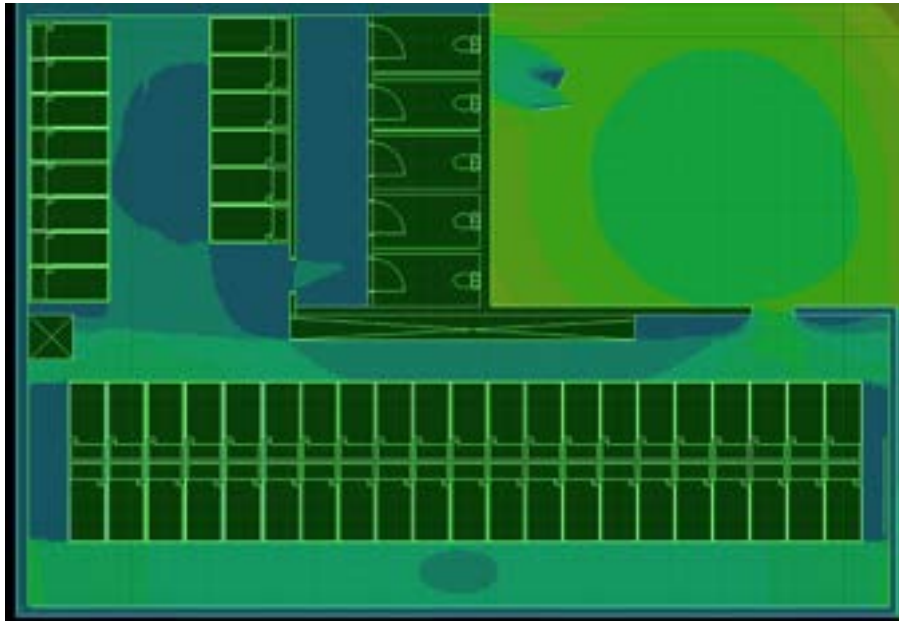
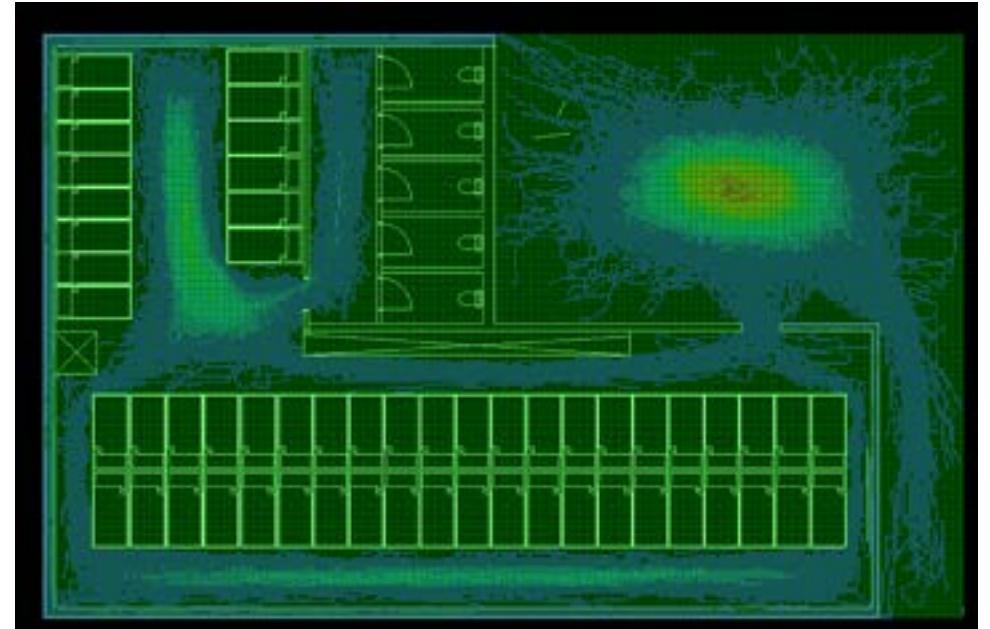


Type A



Type B

Figure 4.20 Bedroom Layout
Source : Author



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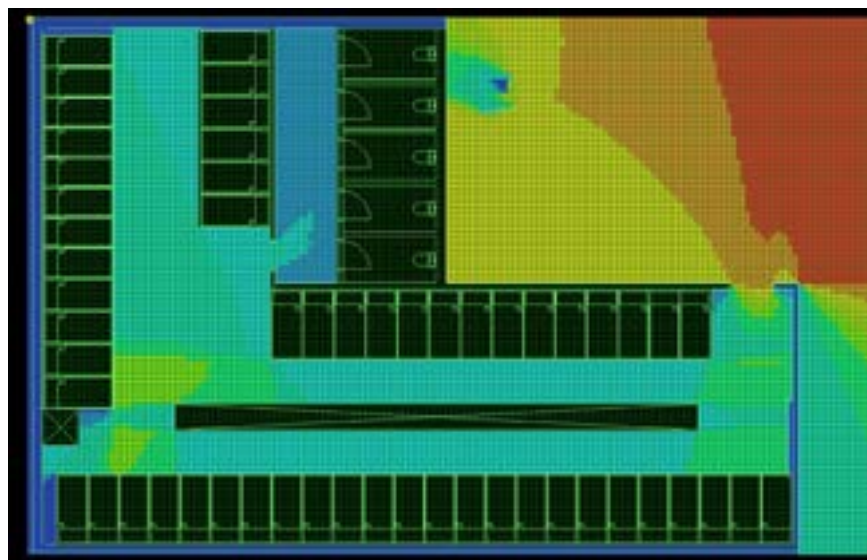
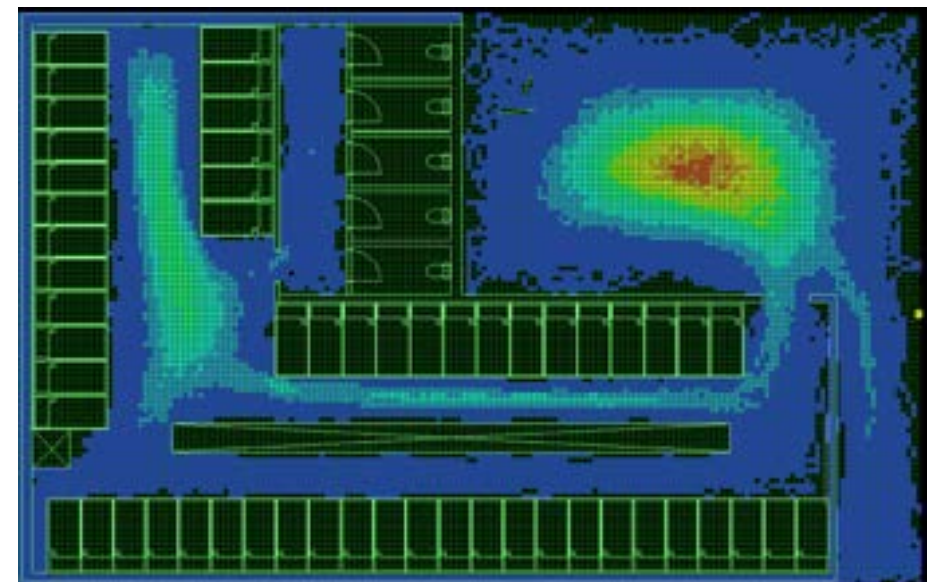
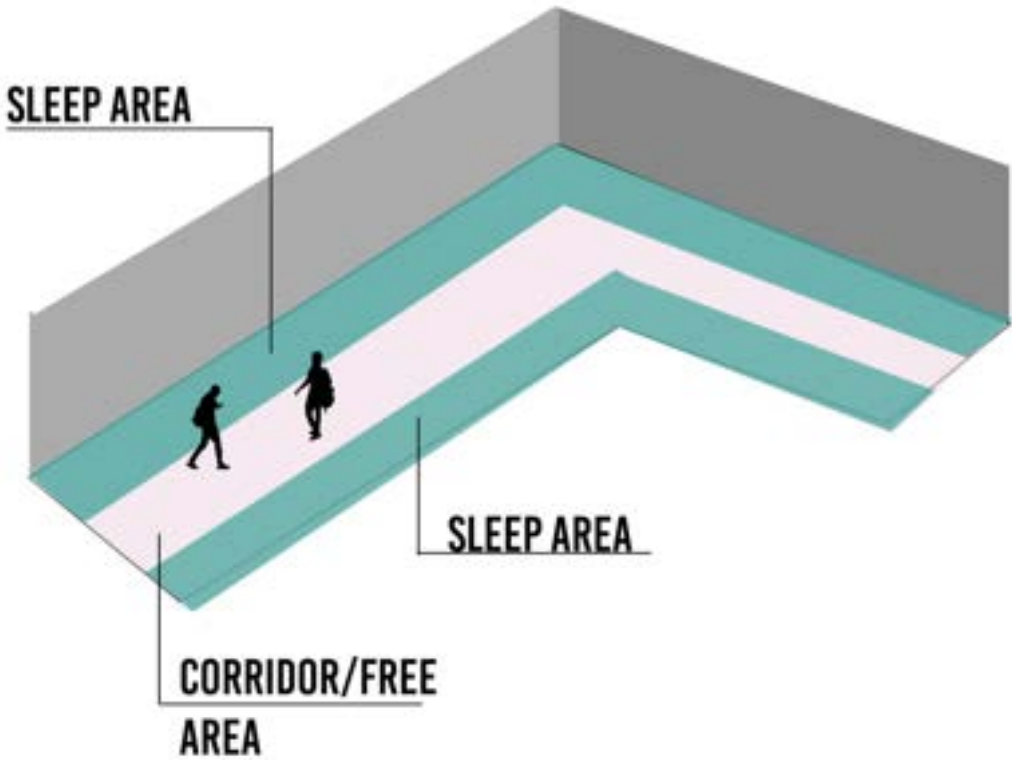


Figure 4.21 Bedroom Layout
Source : Author

2.2 LIGHTING SUPPORT

In addition to a clear axial line in design integrity and connectivity, the lighting must support the "visual concept". The lighting in this building is divided into 4 periods. 8 am, 1 pm, 4 pm and night. In these four periods, from 8 to 1 pm it is expected to minimize artificial lights so that they depend on natural lighting, namely in the form of windows.

LIGHTING	8:00 AM	10.00 AM	1:00 PM	4:00 PM	6:00 PM	8:00 PM
NATURAL	V	V	V	V		
ARTICIAL				V	V	V



In general design, the bedroom has two functions, as a study room and a bedroom. The picture beside is a visualization of the location of the two functions. The study is along the empty space (white) between the front and back beds (green). The study room lighting standard is 250 lux-300 lux. Whereas the bedroom has dimmer lighting but sufficient to read hand movements with the lowest value according to SNI minimum value of 120 lux. In this trial, we used dialux software to find out the exact location and specifications of the lights as well as the design of the openings so that lighting from morning to noon can cover night lighting.

Figure 4.22 Bedroom Layout
Source : Author

Simulasi Pencahayaan Malam Hari (Jam 8 Malam)

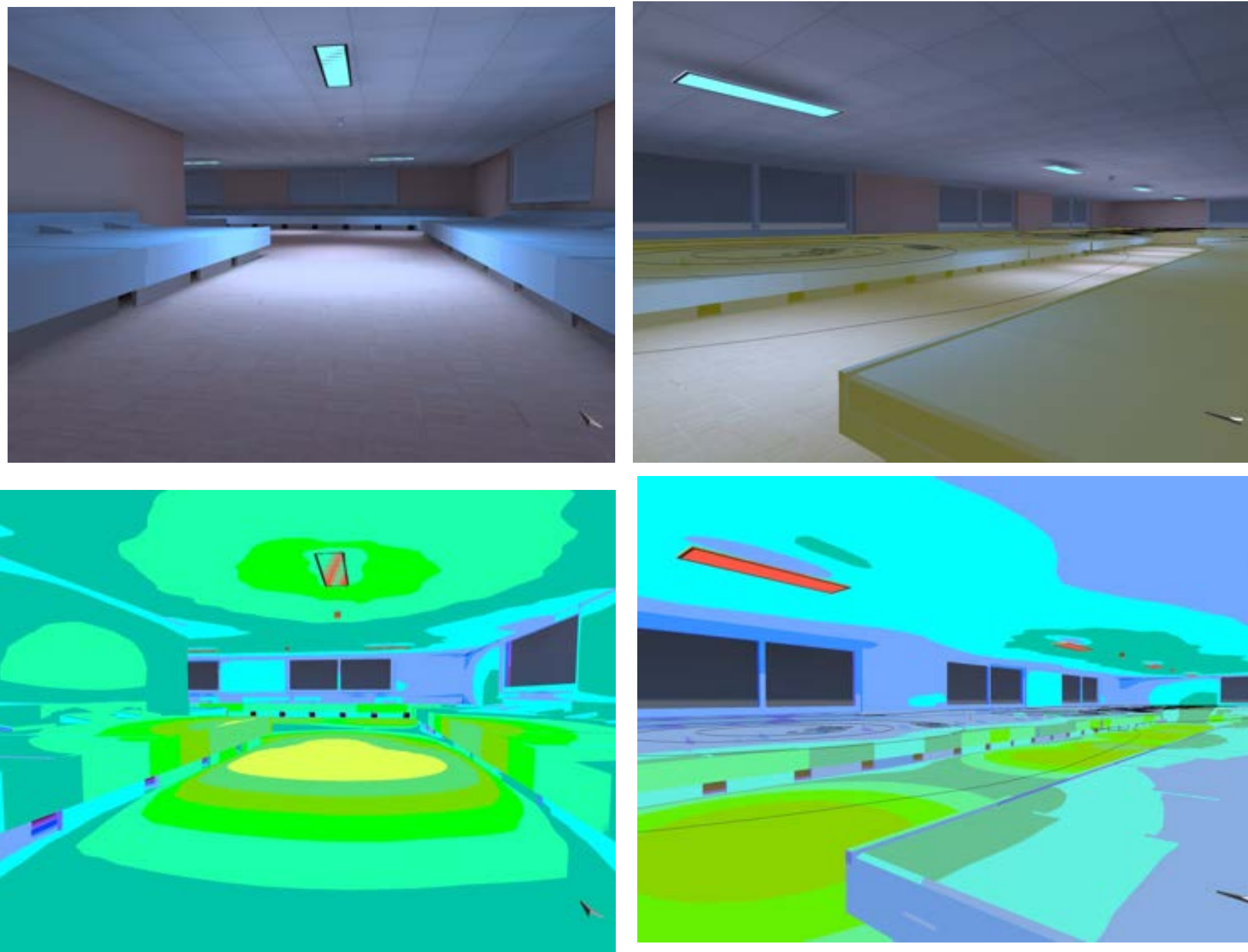
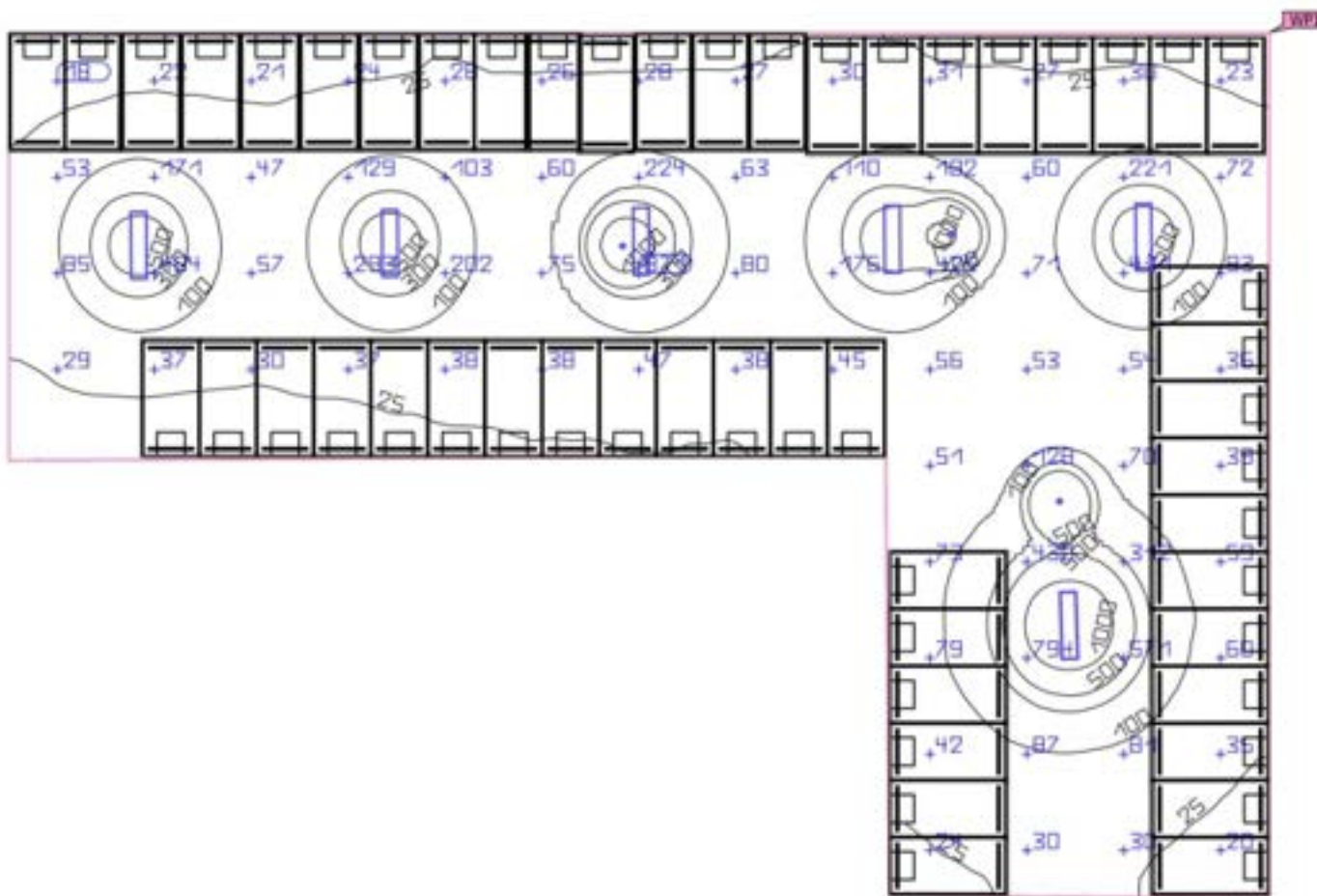


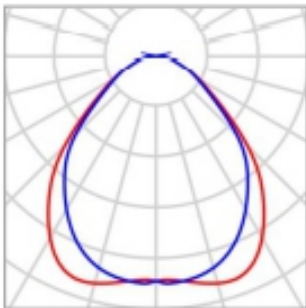
Figure 4.23 Bedroom Dialux Simulation
Source : Author



Results

	Symbol	Calculated	Target	Check	Index
Daylight	D	2.051 %	-	-	DF1
Working plane	$\bar{E}_{\text{perpendicular}}$	124 lx	$\geq 250 \text{ lx}$	✗	WP1
	g_1	0.11	-	-	WP1
Consumption values	Consumption	[640 - 960] kWh/a	max. 7600 kWh/a	✓	
Room	Lighting power density	1.24 W/m ²	-	-	
		1.00 W/m ² /100 lx	-	-	

LAMP SPECIFICATION DATA



Manufacturer	Philips
Article name	RC132V G4 W30L120 PSD 1 xLED34S/830 OC
Fitting	1x LED34S/830

P	29.0 W
ΦLuminaire	3400 lm

4 x Philips RC132V G4 W30L120 PSD 1 xLED34S/830 OC

Type	Field Arrangement
1st luminaire (X/Y/Z)	2.824 m / 11.448 m / 2.000 m
X-direction	4 pcs., Center - center, 5.499 m
Y-direction	1 pcs., Center - center, 0.010 m
Arrangement	A1

X	Y	Mounting height	Luminaire
2.824 m	11.448 m	2.000 m	1
8.323 m	11.493 m	2.000 m	2
13.822 m	11.538 m	2.000 m	3
19.321 m	11.584 m	2.000 m	4

3. VISUAL FRIENDLY LANDSCAPE

Understanding visual barriers is an idea that architects emphasize by designing landscapes that avoid visual blocking. In achieving this concept idea, the architect conducted a study of traffic symbols and the selection of the right material to create a visual boundary that is easily captured.

4.1 BATAS UNTUK PERBEDAAN FUNGSI

Ruang terbuka menjadi ruang yang teramat bebas untuk dilewati, baik memakai kendaraan roda empat, roda dua, atau bahkan berjalan kaki. Kawasan depan pondok adalah batas dari segala kendaraan menjadi kawasan ramah pejalan kaki. Tentu saja hal ini sangat mudah jika para penggunanya adalah mereka yang mampu mengidentifikasi suara menjadi sinyal untuk menangkap informasi. Namun, Darul Ahsom adalah surga sekolah bagi mereka yang tunarungu, maka dalam menciptakan “batas” tersebut, arsitek fokus pada batas-batas visual.

Mendesain sebuah visual barrier tak luput juga mempelajari body of human scale and approximation range. Dalam desain ini, rata-rata pengguna berumur 14-18 tahun dengan standar tinggi menurut WHO berkisar 150-160 cm. This is should make the existence of body-scaled information in the affordance of passability of the barrier. Arsitek mengambil dua langkah strategi, bermain dengan tanda rambu lalu lintas, dan permainan perbedaan ketinggian dan warna.

A. RAMBU LALU LINTAS

Jenderal Bina Marga tentang tata cara perancangan fasilitas pejalan khaki (1995) bahwa fasilitas pejalan khaki dapat dipasang dengan kriteria sebagai berikut :

a. Fasilitas pejalan khaki harus dipasang pada lokasi-lokasi dimana fasilitas tersebut memberikan manfaat yang maksimal, baik dari segi keamanan, kenyamanan, ataupun kelancaran perjalanan bagi pemakainya.

Sesuai dengan tata cara tersebut fasilitas pejalan khaki untuk landscape Darul Ahsom berupa trotoar dengan fasilitas pelengkap yaitu zebra cross.

B.. PEMANFAATAN ELEMEN LANDSCAPE

Jenderal Bina Marga tentang tata cara perancangan fasilitas pejalan khaki (1995) bahwa fasilitas pejalan khaki dapat dipasang dengan kriteria sebagai berikut :

a. Fasilitas pejalan khaki harus dipasang pada lokasi-lokasi dimana fasilitas tersebut memberikan manfaat yang maksimal, baik dari segi keamanan, kenyamanan, ataupun kelancaran perjalanan bagi pemakainya.

Sesuai dengan tata cara tersebut fasilitas pejalan khaki untuk landscape Darul Ahsom berupa trotoar dengan fasilitas pelengkap yaitu zebra cross.



Lampu pengatur
lalu lintas



Banyak lalu
lintas sepeda



Ada penyeberangan
pejalan kaki



Tikungan atau belokan
ke kanan



Jalan dua arah



Bundaran dengan
prioritas



Jalan menanjak



Jalan licin



Jalan yang cekung

Figure 4.24 Street Sign
Source : Google

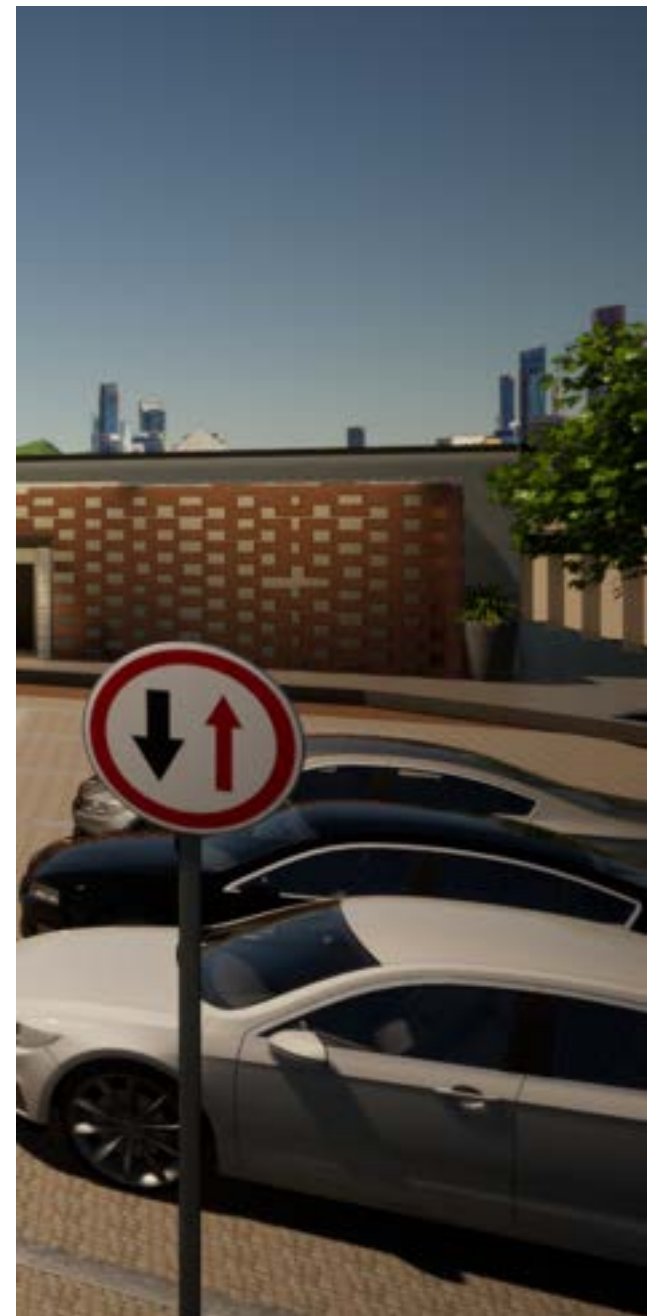


Figure 4.25 Two Way Circulation Render
Source : Author

4.2 CIRCULATION

Two Wheels Circulation

The motorized vehicle lane leads to the south side of the building which is a parking area for two-wheeled vehicles. This circulation design is direct because it gives one choice to the final destination with clear visual access and always on the left side of the road.

Walking Circulation

Sidewalks on the right and left of the road as pedestrian paths that are connected to the school entrance. The line has two stopping points, namely the mosque and the office/school entrance. The two points have wide terraces to prevent crowds of people on the circulation path.

4 Wheels Car Circulation

Four-wheeled vehicles have wider road lanes. According to the Regulation of the State Minister for Public Housing No. 32 of 2006 that the ideal lane standard for one and two lanes is 5.5-6 meters.

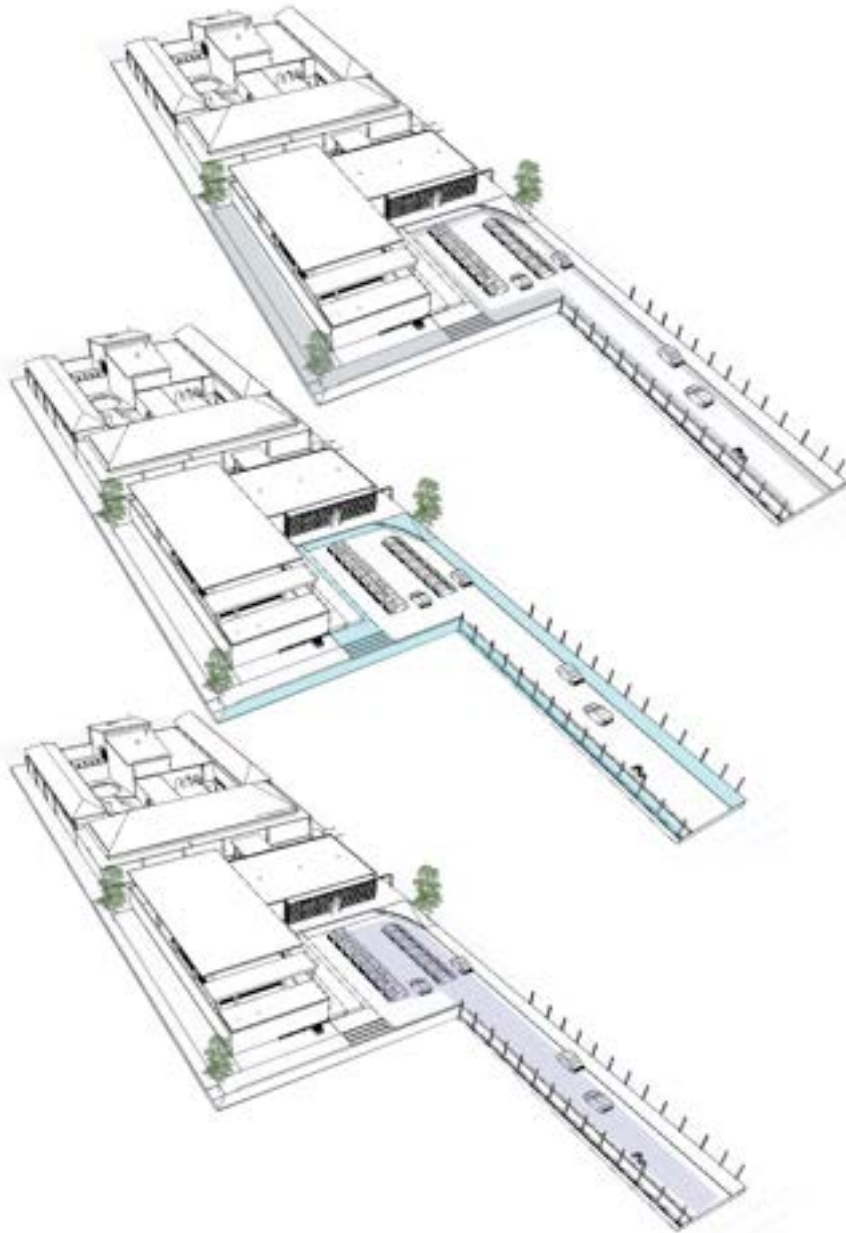
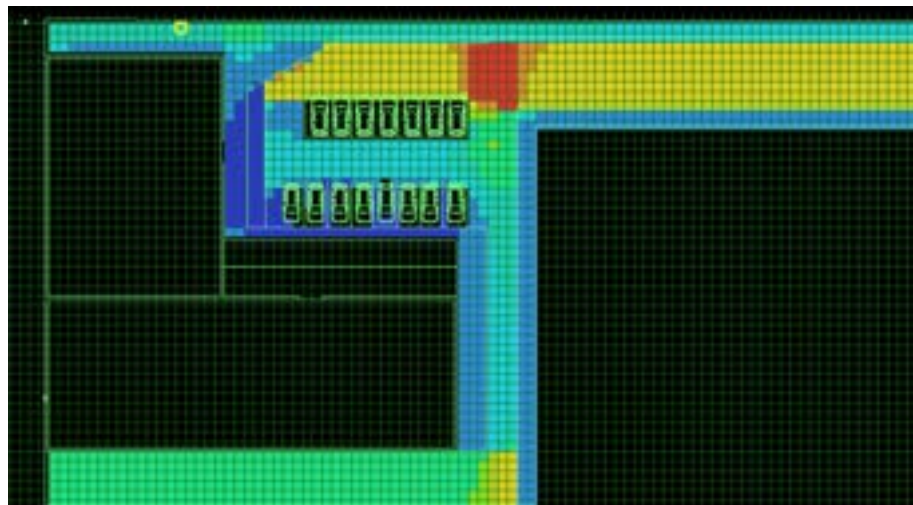


Figure 4.26 Axonometric
Source : Author

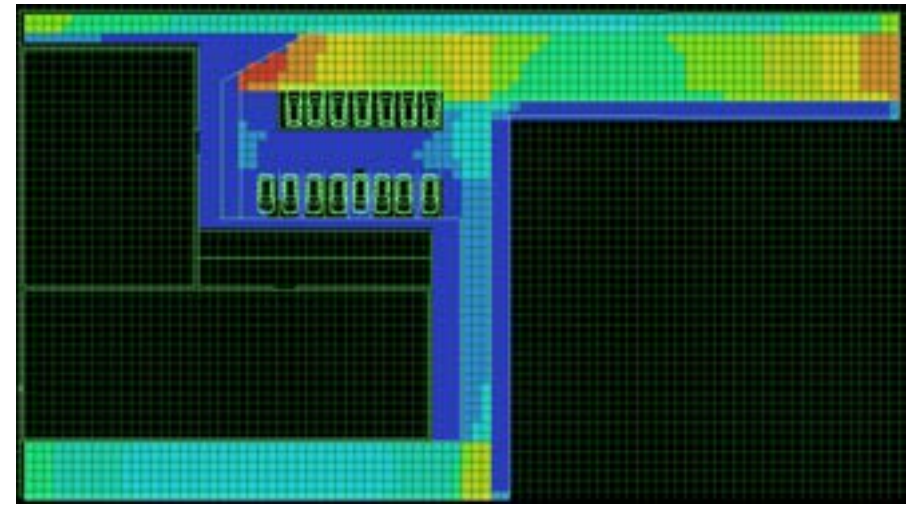


The picture beside is a diagram of the direction of circulation. In designing this direction we try to prove it from the depthmap simulation in the image below. The simulation shows that each path has smooth connectivity and easy visual connections. Connectivity on the road has a medium range value and the point for gathering space has the lowest connectivity value. This is in accordance with the landscape function, because the part that has the lowest connectivity is the part that is not used for walking around. The results of the point movement diagram, it can be concluded that blue is the last movement and this is in accordance with the landscape design circulation flow. From this, the paths that have good movement are in green, yellow, light blue due to the wide road and avoidance of bends.

Figure 4.25 Siteplan
Source : Author



Connectivity



Point First Movement

GRAPHIC OF STEPDEPTH VISIBILITY

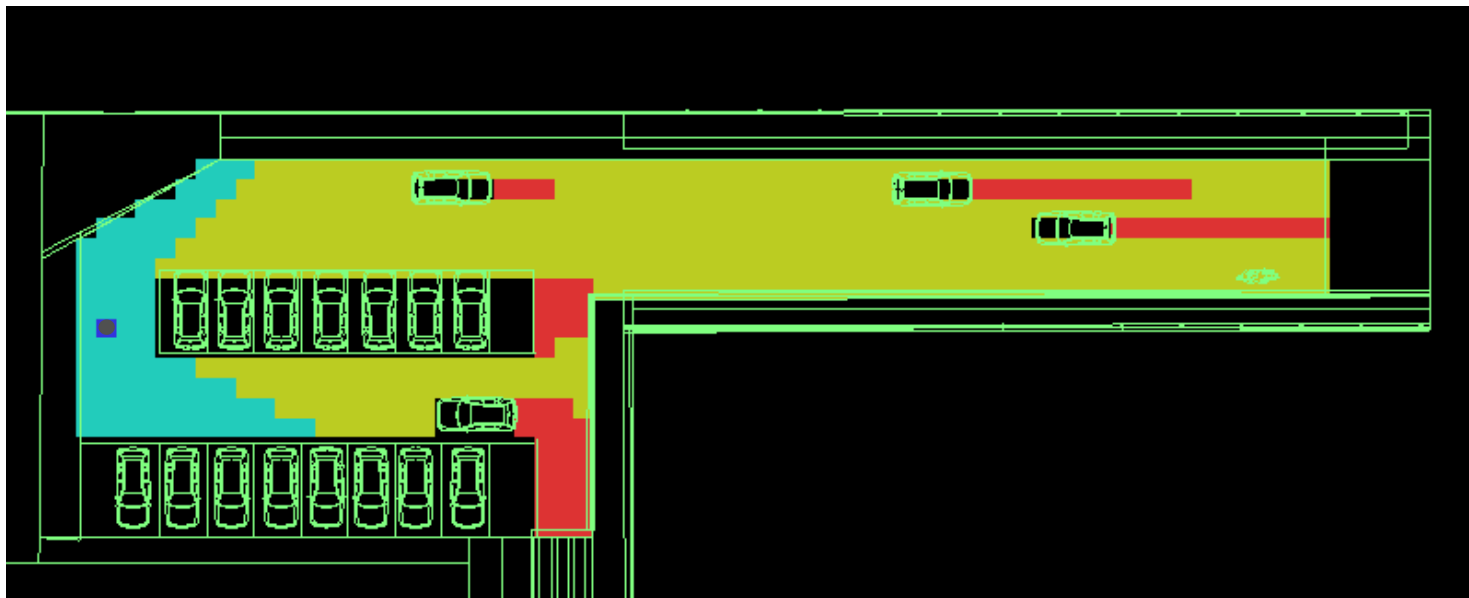
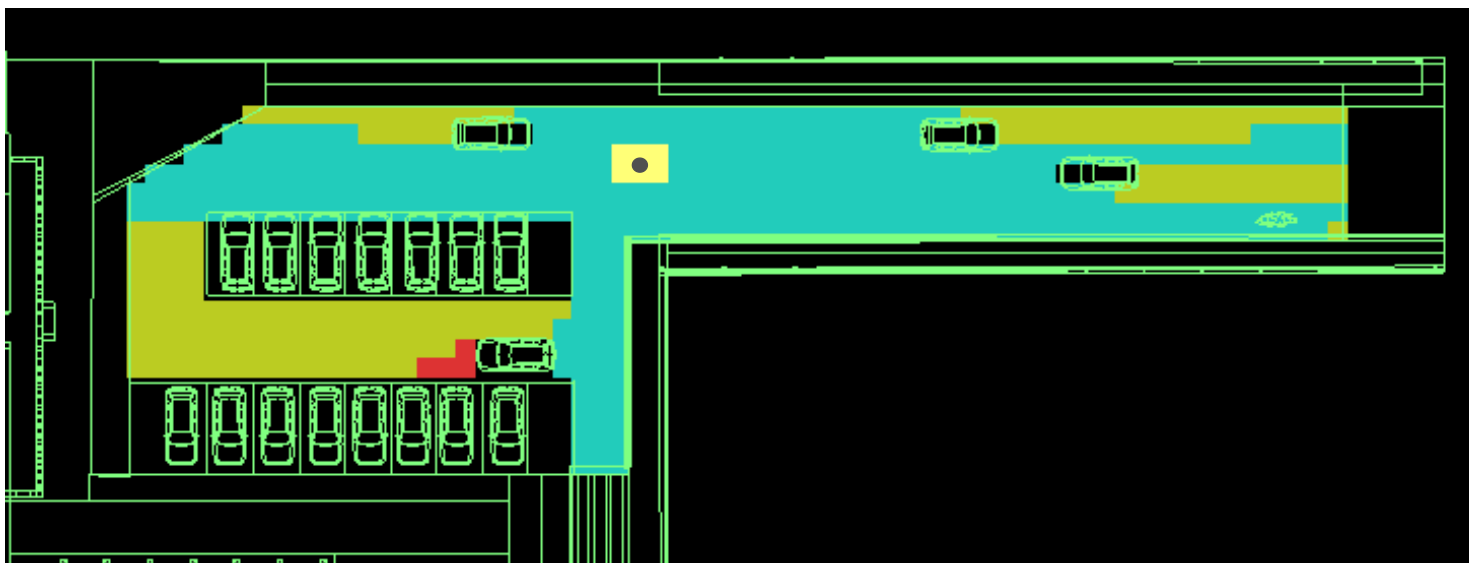
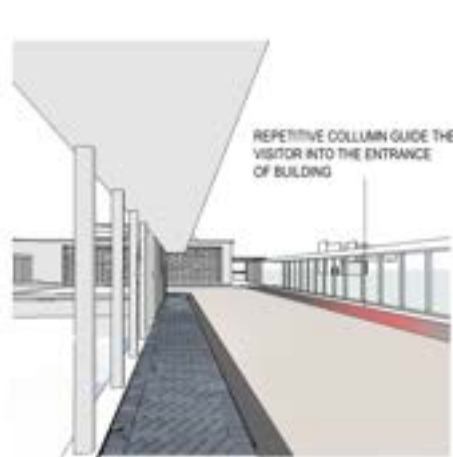


Figure 4.27 Depthmap Simulation of Siteplan
Source : Author

Visibility Graph Map (VGA) is used in the space syntax method to get the result of visual visibility of influence based on motion and understanding the space around us (Varoudis & Penn, 2015). The following is an image of the visibility graph map (VGA) on depthmapX software. The pictures above are a diagram of the direction of the circulation of the main road, at the intersection of points, showing that the visibility graph is still relatively safe by showing that there are not many blocking areas. The gray dots represent the observer's standing point, so the blue color indicates that the area is easy to see from that point. While red is an area that is less visible.

Apart from ensuring the visibility area lanes are clear, the visual concept is included in the visual sign design which is able to provide a clear signal to deaf people.



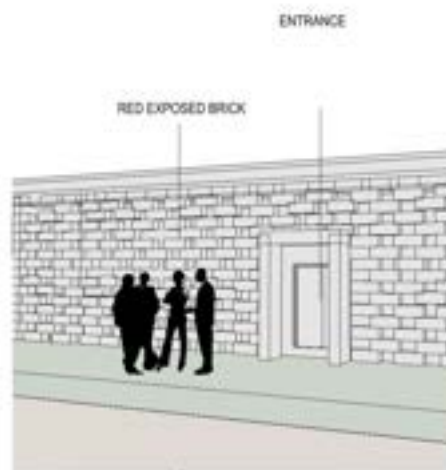
ENTRANCE :
Visual barrier showed by two lane separation, vehicle pathway (grey) and pedestrian (blue). Visually very easy to different tactile and visual elements on it. Tactile with brick materials and visually different with the texture of concrete (on vehicle pathway). The Pathway for pedestrian required 1.8 meters wide that can be passed for two people.



CROSS WAY :
Zebra cross will help deaf to crossing the lane between motorbike and sidewalk. Parking for bikers located on beside that. Gravel soil land function as bike parking. Different terrace levels will welcome pedestrians to choose which way they will stop. Mushholah or entering Dahdul Aksoni's office area.



LIGHTING FOR PATHWALK
In low natural light the deaf environment must still have adequate lighting. Every 3 meters distance, a 13 Watt LED lamp will be used with 806 lm lighting.



The combination of red brick exposed facade provides visual communication for the entrance to the office building. The arrangements themselves create a drama of light and shadow on the facades with the sun striking them also for blocking the direct sun lighting. The game of red that contrasts between the surroundings which is a lower-saturation color gives a sense of way finding.



After getting off the vehicle, visitors will be greeted by two lanes with different height levels. On the circulation pathway (brown) is the connection of the pedestrian circulation path from the zebra cross, while above it is the front porch from the building entrance. The pedestrian path is 1.8 meters wide with the aim of avoiding interruptions, while the terrace is 2.8 meters wide and provides space for conversation.



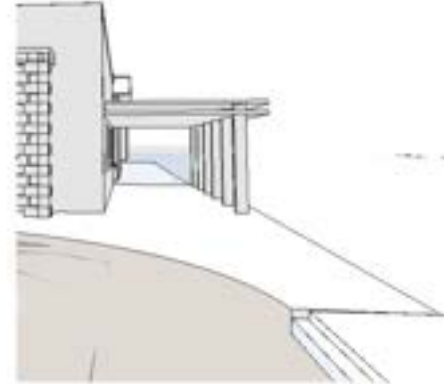
Vegetation will give sign also for people may stop their walk. Because the heat temperature of the sun lighting. So, vegetation will locate at area that may used as stop-point like this area. This tree will not blocking the circulations.



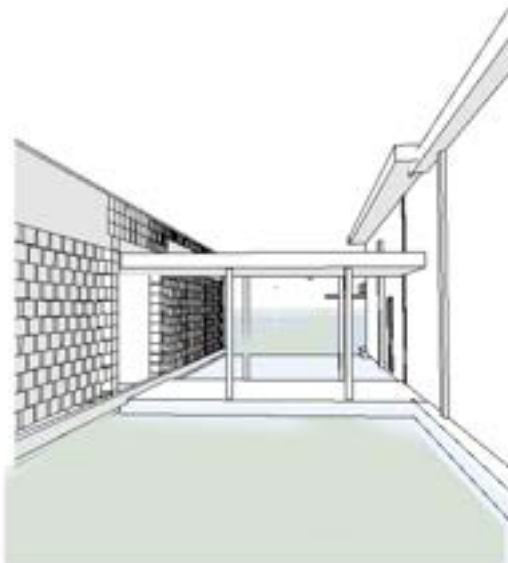
The combination of red brick exposed facade provides visual communication for the entrance to the office building. The arrangements themselves create a drama of light and shadow on the facades with the sun striking them also for blocking the direct sun lighting. The game of red that contrasts between the surroundings which is a lower-saturation color gives a sense of way finding.



The hallway of this mosque gives a private impression so that this circulation path seems to indicate access for those who want to come towards the hall. The floor material is a reflective material so that it extends the visual awareness.



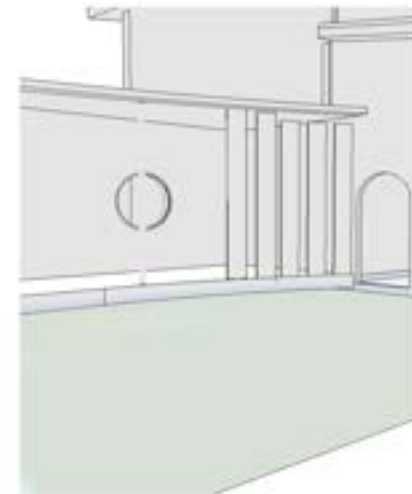
Clearly Intersection
Directions should be clearly visible and easy. Hence the road design which avoids visual blocking. Eased, or soft corners allow pedestrians to see others and avoid collisions.



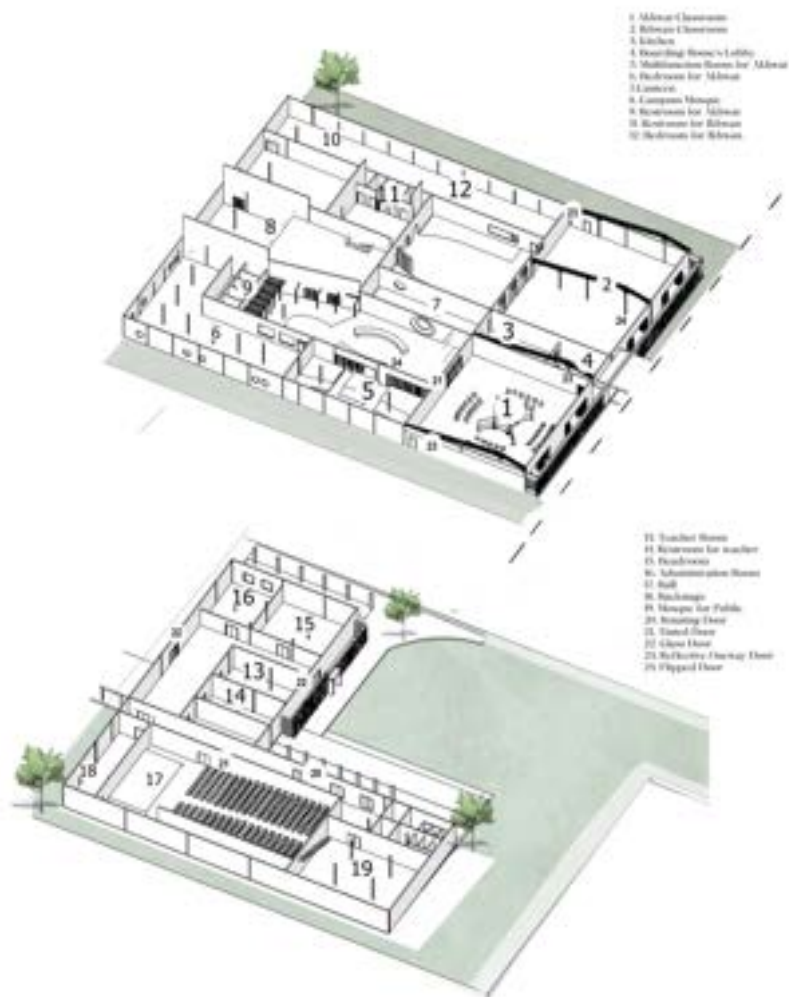
The brick facade always be the opening of the school building. The connection of each mass will be connected by corridor. This corridor can be accessed only for teacher or canteen staff. The student itself can use it based on licensing. The area between those mass is function to be gardening activities.



Connections between: multipurpose spaces for akhwat and the mosques and bedrooms are pathways circling the inner court. With two curved seats providing a comfortable place for children to rest. The mushollah has an elongated canopy that connects the ablution room and the entrance to the mushollah.



From the brother's side, the food reception corridor is shown with wood panels with vine plants. The inner court itself connects each mass, without any seat place like akhwat.



Door opening offers a degree of privacy in each room, and makes the integrity of each room's visibility strong or not. Therefore, architects designed various door models for this purpose. Doors with clear glass will certainly provide clear and open information to outsiders. Meanwhile, glass with one way direction will only provide information on one side. Folding doors can combine the two functions of a room as an open or closed space.

VISUAL BARRIER WITH OPENING



Based on the test simulation, it can be concluded as follows:

1. The integrity between the entrance to the parking lot is good enough in terms of visibility or visual dimension distance.
2. The vehicle's road speed is quite easy to understand with the connectivity indicated by the yellow and green colors as the average indicator.
3. Traffic jams/circulation is not smooth in the 2wheels vehicle lane towards the parking lot. The solution to this is a road that is wide enough for 2 vehicles, which is 3 meters wide.

VISUAL FRIENDLY LANDSCAPE



Entrance (Main Gateway)

The architect tried to explain how landscape as an opening space be able tell the flow of entry and exit through visual concepts.

1

Public will come to the School area by two gates, the pathways or use vehicles road.

STORYLINE



Walkways

Entering the school area, you will find a walkways with continuous paving of anti-slipping stone. Contrasting patterns, will visually show the boundaries between vehicle roads and walkways. Column partitions will help guide the way to the pedestrian bridge. The vines on the south side serve as a visual barrier between the outside of the site and inside the area as well as a means of reforestation at the front of the school. The level of walkways is about 10 cm, it may help the security awareness.

2

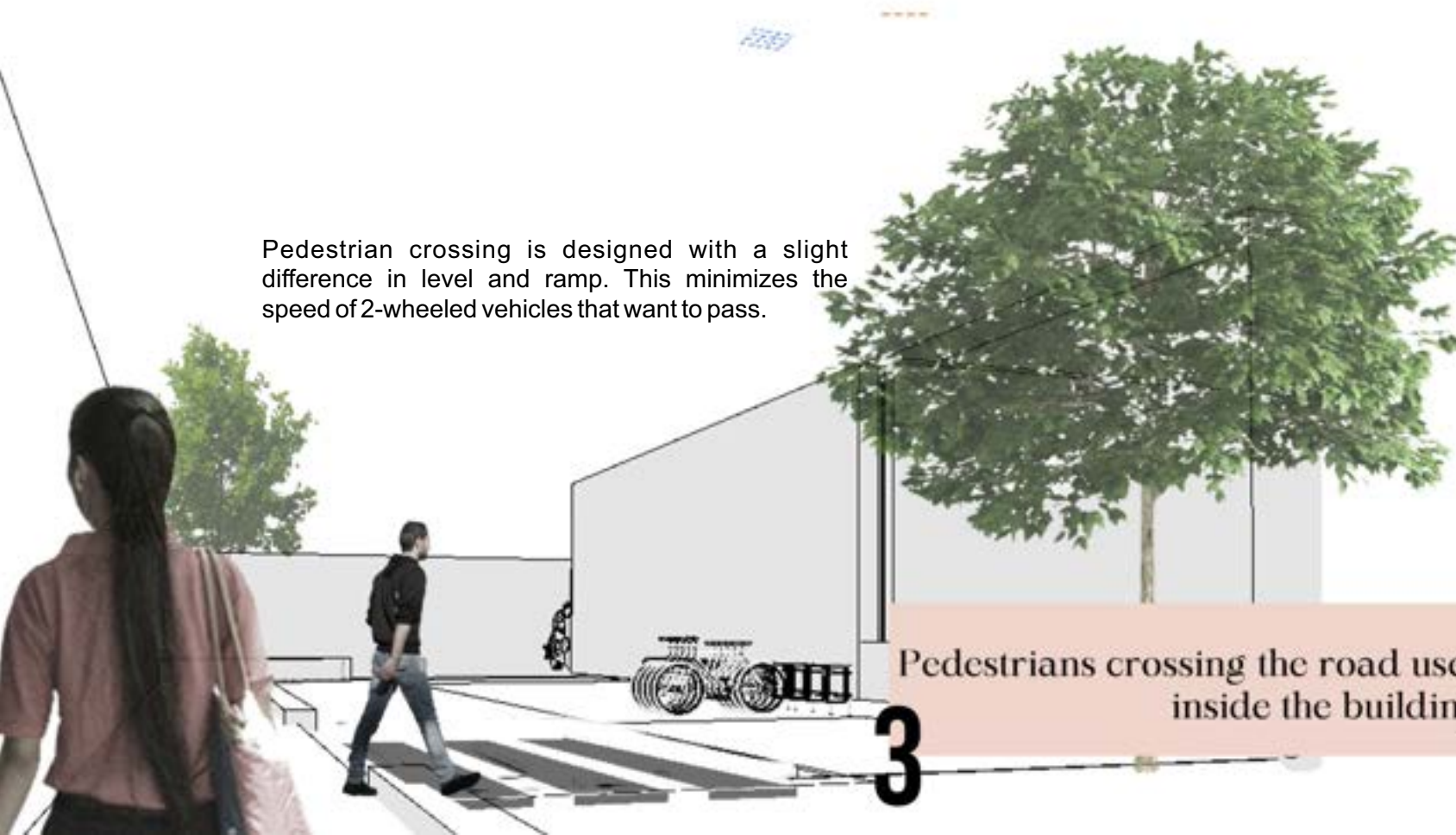
They go to parking area or just drop off the passenger at the drop off point.



Parking and Drop Off Area

Parking sign is a general sign visualization of the parking lot. Parking with a capacity of 20 cars has a circular lane to arrive at the drop off area and exit the Pesantren area through the front door. Parking area barrier and drop off using Donut Bollard, this type is chosen because of it possible to mounting connecting chain, and low voltage LED source.

Pedestrian crossing is designed with a slight difference in level and ramp. This minimizes the speed of 2-wheeled vehicles that want to pass.



Pedestrians crossing the road used zebra cross to going inside the building area

3



4

Bikers and Two Wheels Vehicles can ride it to the parking lot areas.

The parking area is located in the southern part of the mosque for 2-wheeled vehicles. With two east and south sides. The bicycle area has bicycle racks that allow riders to lock their bicycles. The bicycle parking area which “enters” slightly from the lobby is suitable in terms of security aspects.

5

Pedestrians and bikers can continue walking thru the pathways front the mosque.



6

All of the visitor (passenger, from car parking, and pedestrian walk will gathering in front of the office of Boarding School

The entrance as well as the gathering point for users from the drop off area, users from car parking, and parking for two-wheeled vehicles, has a slightly open area. Its function is not to become an area to relax, because basically this section is for circulation to come and go.



The journey of two-wheeled users will follow the path in front of the mosque complex. Walking down the hall of the mosque which can be used to sit or rest for a while, the visual barrier can be seen from the repetition of the columns supporting the mosque's canopy. In addition, the level difference between the lobby as a resting place (leyeh-leyeh) and the path for two-wheeled users who want to enter the area inside the cottage.

4. Mosque for the Deaf

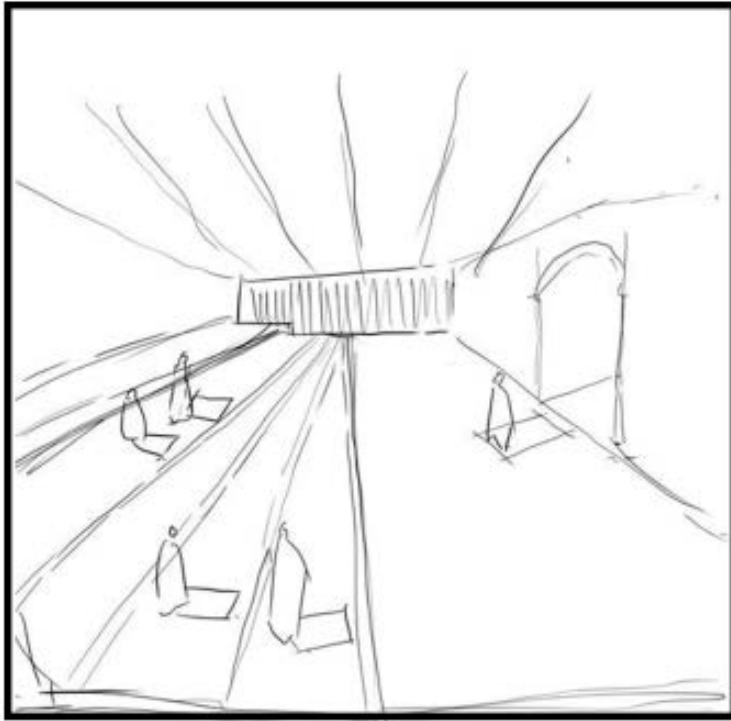


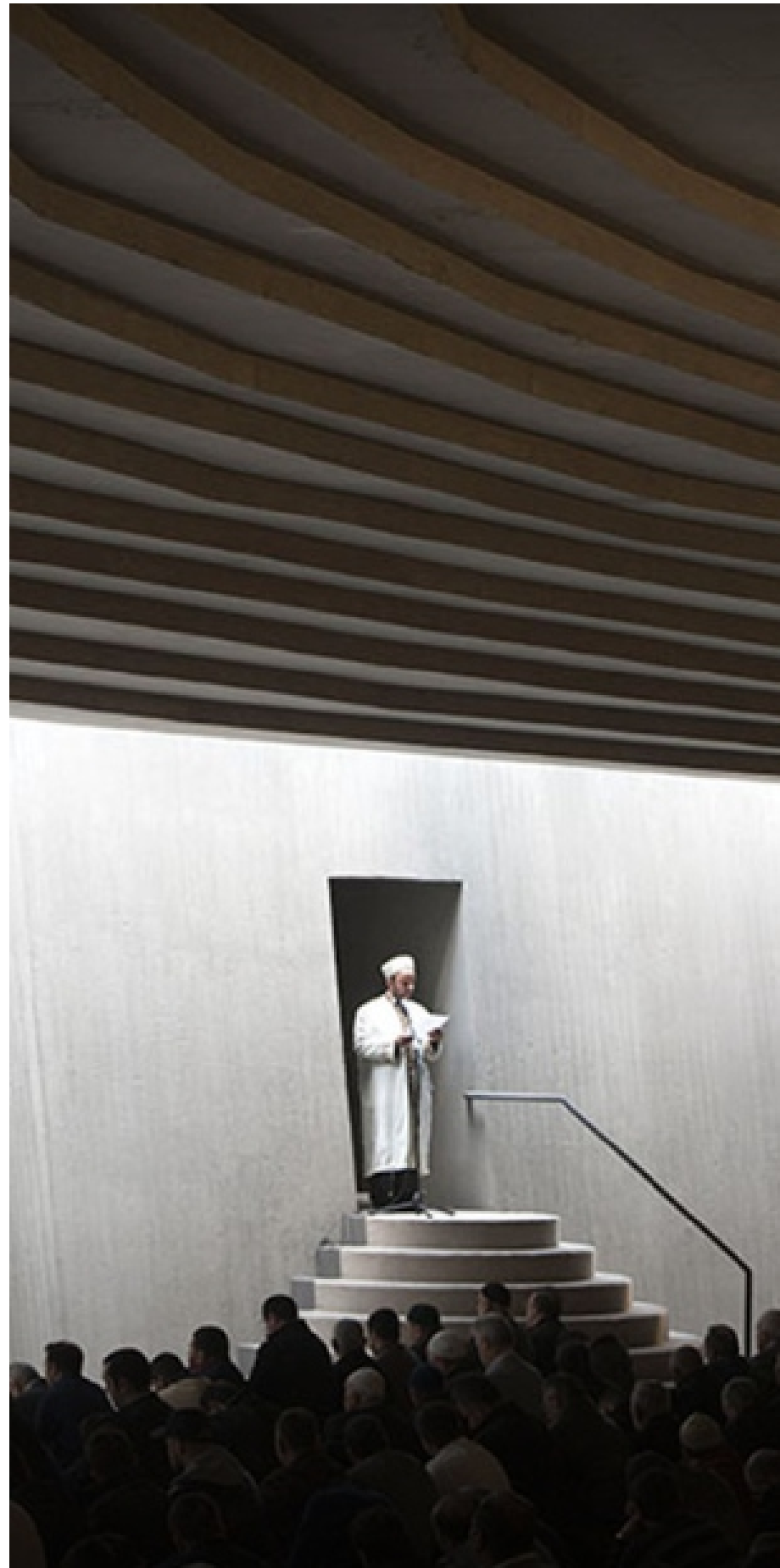
Figure 4.26 Sketching of Mosque
Source : Author

MOSQUE AND STRATEGY

This image is show the Mosque of the Deaf Mosque, with modified the leveling stage of the shaff. Its for the shake clear vision. The shading wall is mirror that used for aesthetics, and also visual reflection of the imam's. Reflective surfaces can also be used in movement spaces to avoid collisons around corners. This is inspired by Mosque from Turkiye.

Wall reflector material.

Reflective surfances are important for the design, we need materials that have highly refective surfaces to people who is wanted to read the ASL. Stone materials for the floors



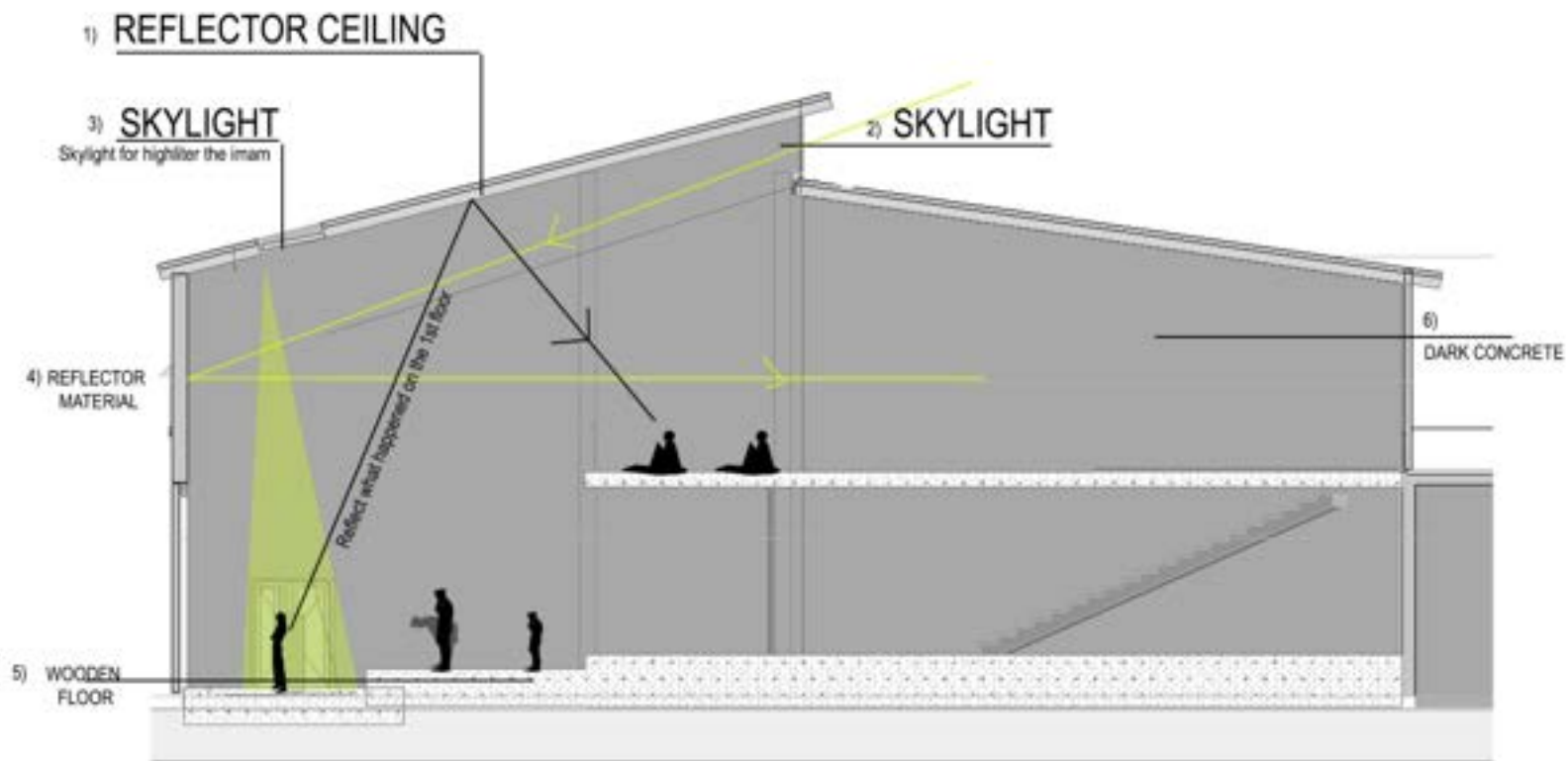


Figure 4.28 Mosque Section
Source : Author

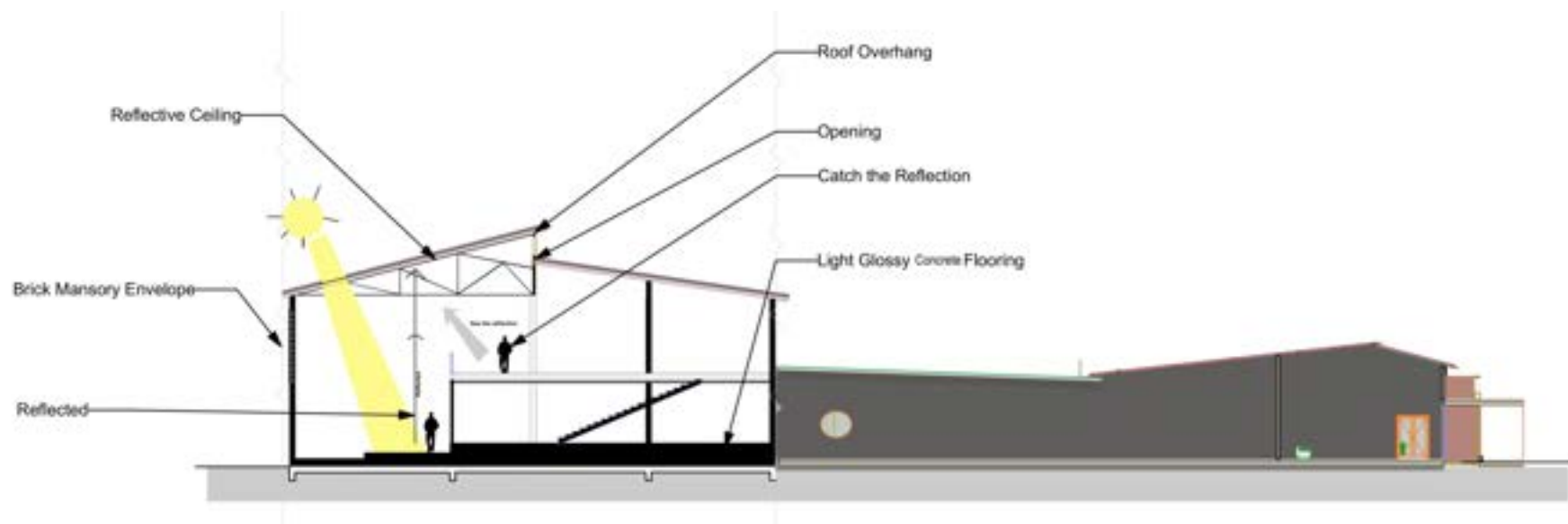
The function of reflection ceiling (1) to emphasize visual awareness range to the second floor. When, the Imam doing ruku or other pray movement, they need to know by visual. This reflector ceiling have this principles, which are :

1. This ceiling have an impact to the less installed lighting and extension by providing energy savings.
2. The risk of the glare shouldnt make people itself didnt comfort
3. Poor lighting could result eye strain and fatigue.

Laqfoil Reflective Materials would used at the ceiling of the building. The depth of reflectiveness determines by the color of chosen material. Darker membrane shows higher percentage of reflection. Such texture is very popular within low height places, because not that it only dissolves the surface, but also reflects everything around the room. The darker color also make the light itself absorb, minimize light reflecting.

Skylight (number2) concept is direct natural lighting to accomodate light sources for the building itself. The skylight theory is trying to reflect it at the reflector material (4), which we tried to minimize used the light absorb materials for the number 4. Brick polished that has 75-85 LRV is choosen for the shake of distribute the light. Wooden floor (number 5) is choosen for sensory reach by tactile and vibration. Wooden Panel would designed at the floor. This wooden panel should have small LR value, its for the reflective of the captured shadows, the reflector ceiling shouldnt get any high light reflection to avavoid glare.

Skylight (number 3) is direct lighting to the imam. It will higlighter the imam like spotlight on the opera show.



PVC CEILING



CONCRETE
POLISHED

The opening by brick arrangement window will allow the fresh air come in to the building. Its also for tmake the natural lighting come inside. Then the skylight itself also for natural lighting. From that skylight the light source can make the building used natural lighting at the subuh-duhur-ashar time. The light itself will reflect the light to make the ceiling show the reflection of the imam sholat. Reflective flooring with polish concrete floor used the bright colors to give the good value of reflection and also reduce the heat absorp.



SUBUH



ASHAR

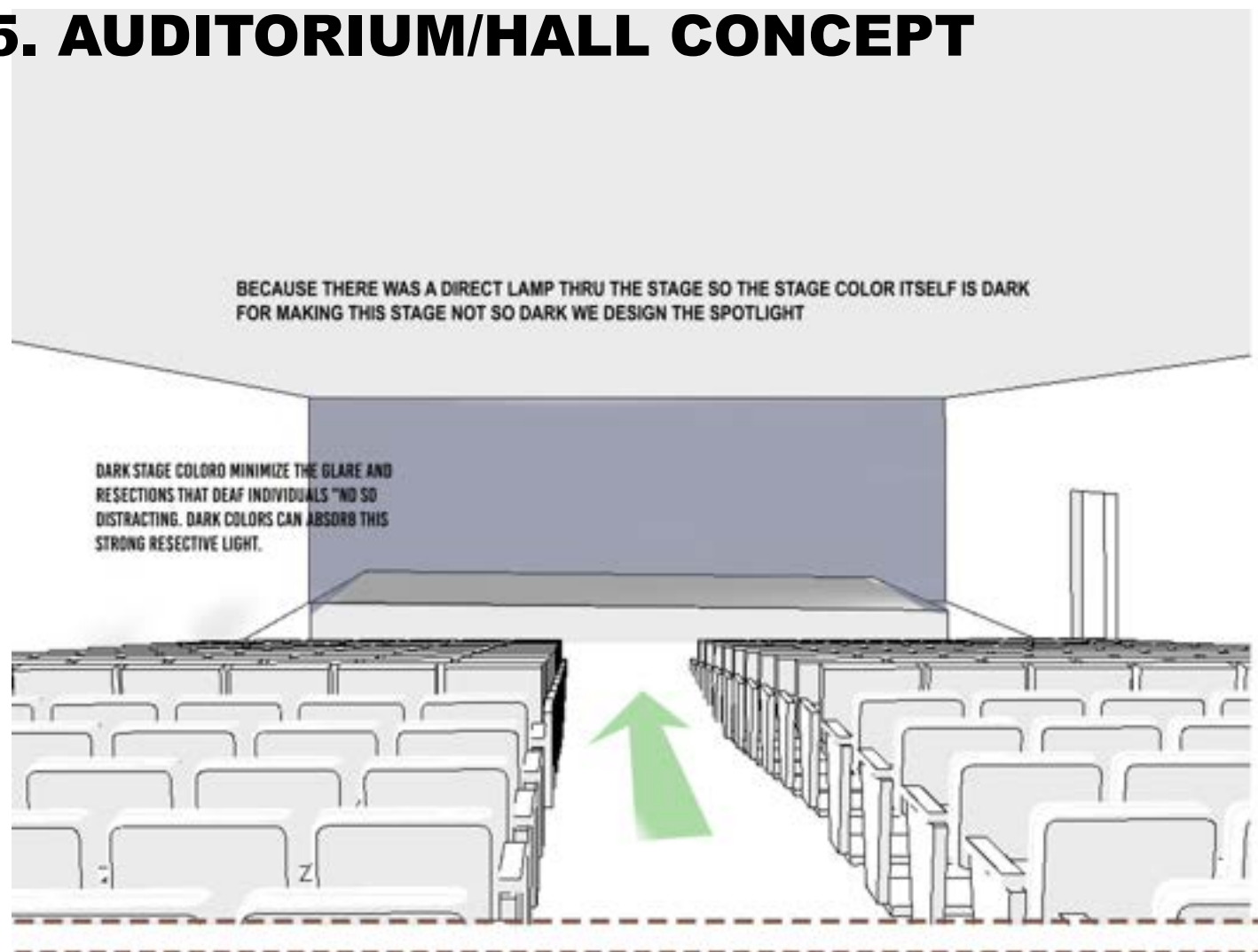
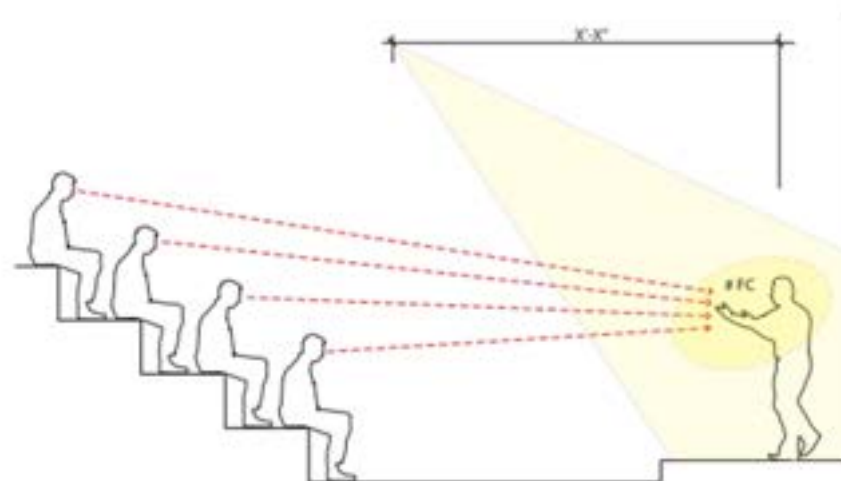


DUHUR



MAGHRIB

5. AUDITORIUM/HALL CONCEPT



Low reverberation is required for speech intelligibility. So Auditorium used cladding wall finished with textile flooring to absorb the sound vibration due the nearest place. . The color itself used the contrast color for the skin. the seat have 1500 mm radius between the stage.





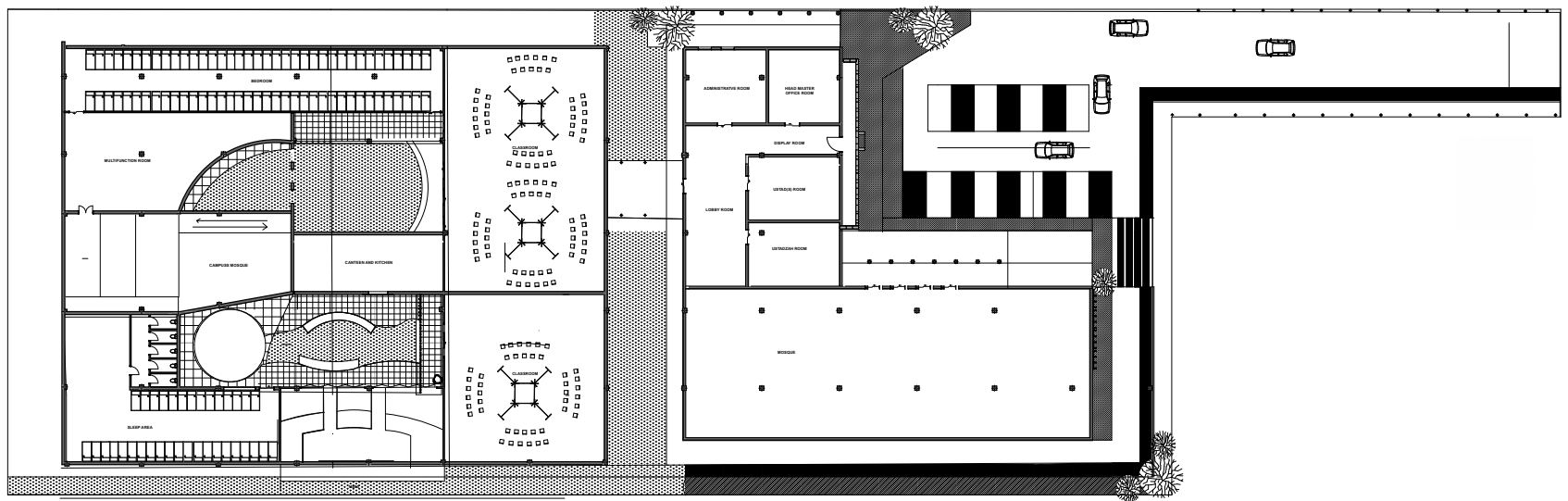
Auditorium

The concept of a simple stage with the wooden frame and dark backdrop on the stage background as well as a focal point. These same two colors of the floor and ceiling seem to direct the audience's gaze towards the stage. The dark background is chosen because the show often uses the light to highlight the hand language, face gesture, or expression.



LEGENDS:

- MOTORCYCLE WAY
- (1) PEDESTRIAN WAY
- (2) DROP OFF
- (3) PEDESTRIAN BRIDGE
- PARKING FOR MOTORCYCLE
- PARKING FOR BICYCLE



The site plan of the Islamic Boarding School for the Deaf has a linear shape with a westward orientation. The front building is the opening door to the school area. The part that functions as a facility and the head office of this Pondok has a mosque that is intended for local residents, school academics, and for the ballroom.



Akhwat Innercourt



Ikhwan Innercourt



Window Bay



Classroom Outdoor Prespective



105
Entrance to Deaf School



The Garden in Between



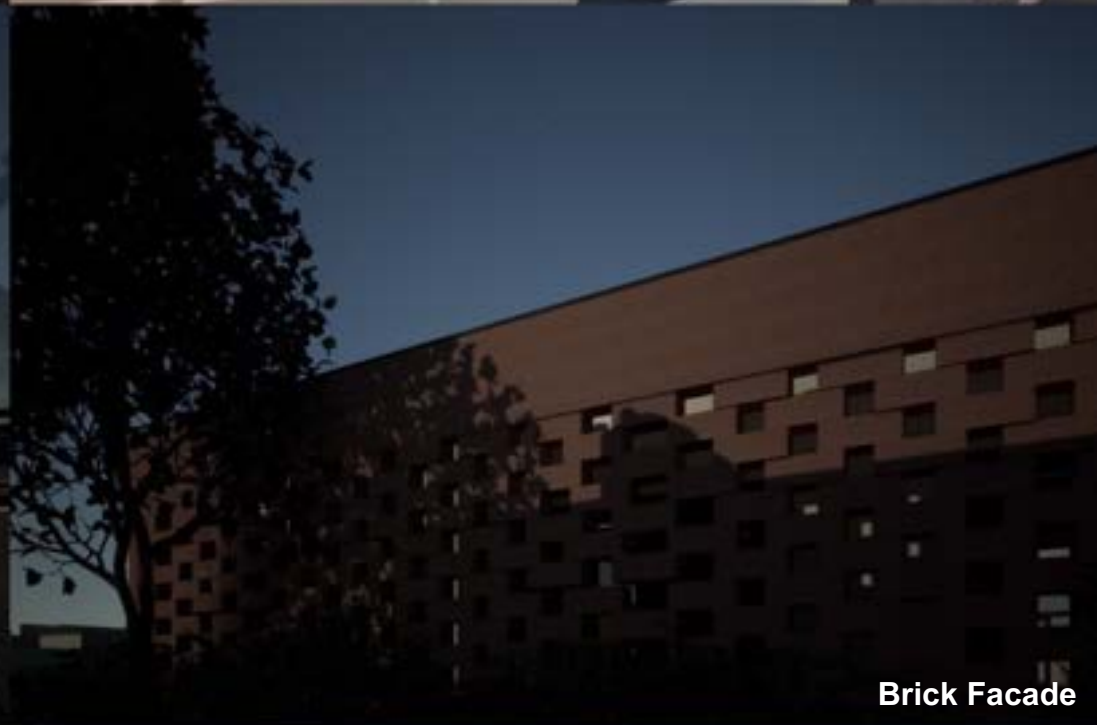
Night View



Auditorium



Night View



Brick Facade



Classroom Indoor



Bicycles Parking

05

DESIGN RESULT

Result phase that include of sistematycal building and design.

Property Size
Room Standard
Siteplan
Ground Plan
Classroom Plan
Bedroom Plan
Elevation
Section
Render

PROPERTY SIZE

BUILDING COVERAGE RATIO

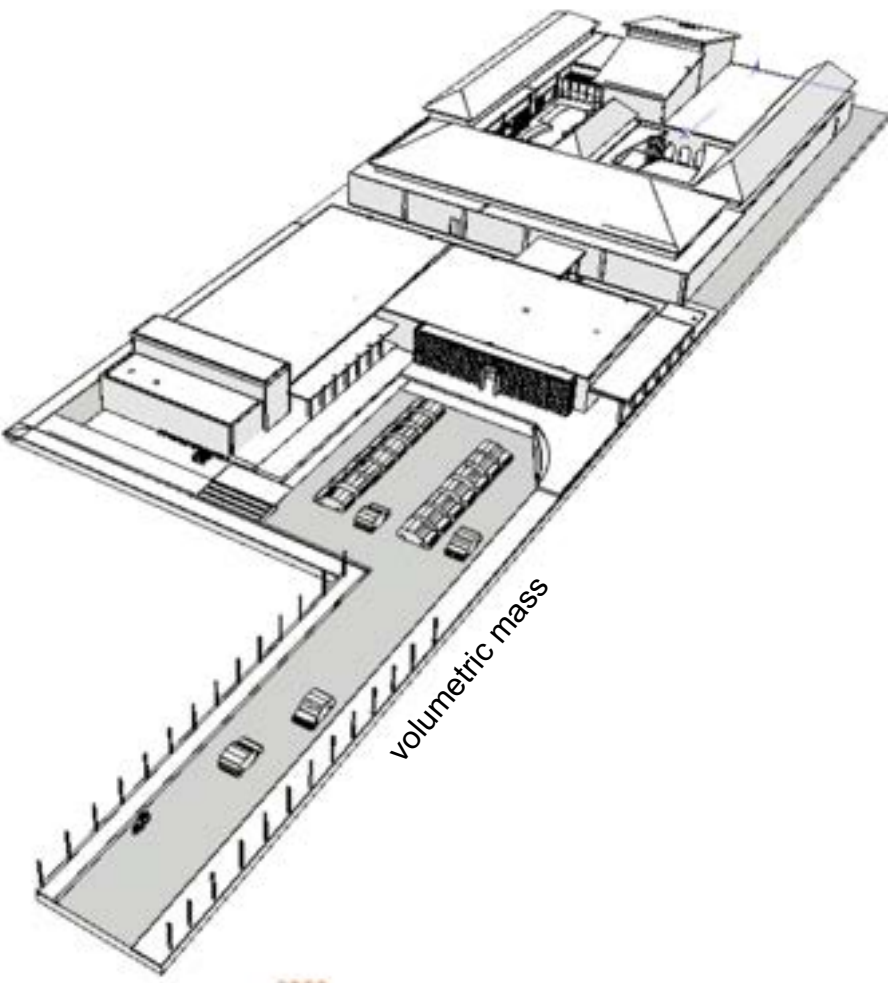
The maximum building coverage ratio is 60% of the site around 11.200 m² while the total designed building area is 3.600 m² and not violating the maximum building coverages by building codes.

FLOOR COEFFICIENT RATIO

The maximum floor coefficient ratio is 1,5 with 16.800 m² as maximum floor size. While total designed building floor area is 4100 m² and still below the maximum value.

GREEN COVERAGE RATIO

The green coverage ratio that need to be fulfilled is 15% of the site or 1680 m². In this design the Green Coverage Ratio is about 1700 m² which is more than the minimum range.



SETBACK

10 meter

KDH

15%

BCR + FCR

60%+1,5

Building Height

18 meter

SANTRI BOARDING HOUSE WITH TOTAL AREA

Kelompok Ruang	Perhitungan	Total Area
Ruang Tidur Kamar Putra	Kamar Asrama Putra Kapasitas 120 orang Asumsi luasan 25m2/8 orang Total luasan 375 m2	
Kamar Mandi Putra	Standar luasan 2,30 m2/toilet 1 kamar 8 orang, 1 toilet. 120 santri : 8 = 15 kamar mandi	

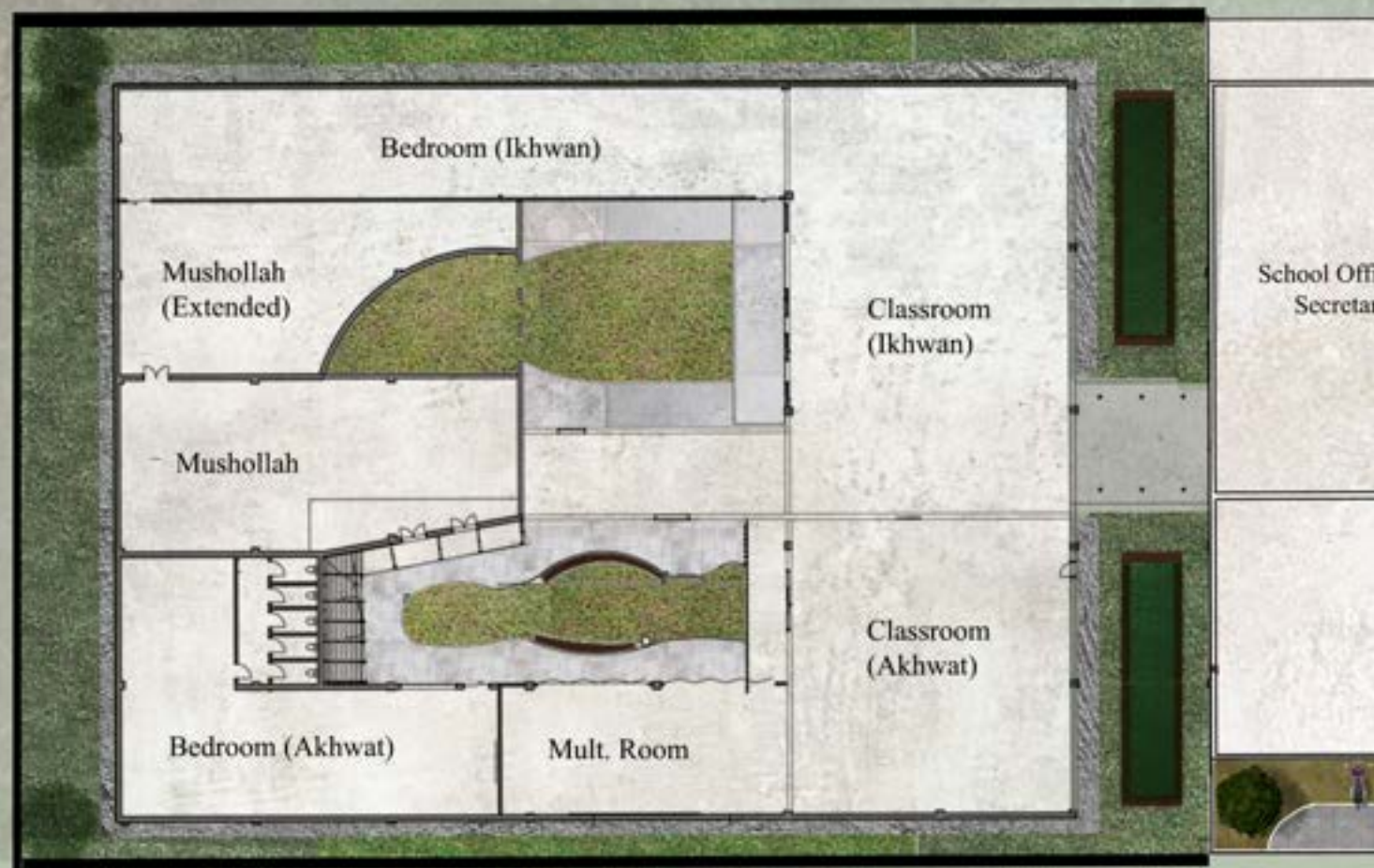
BOARDING SCHOOL PROGRAM ROOM WITH AREA

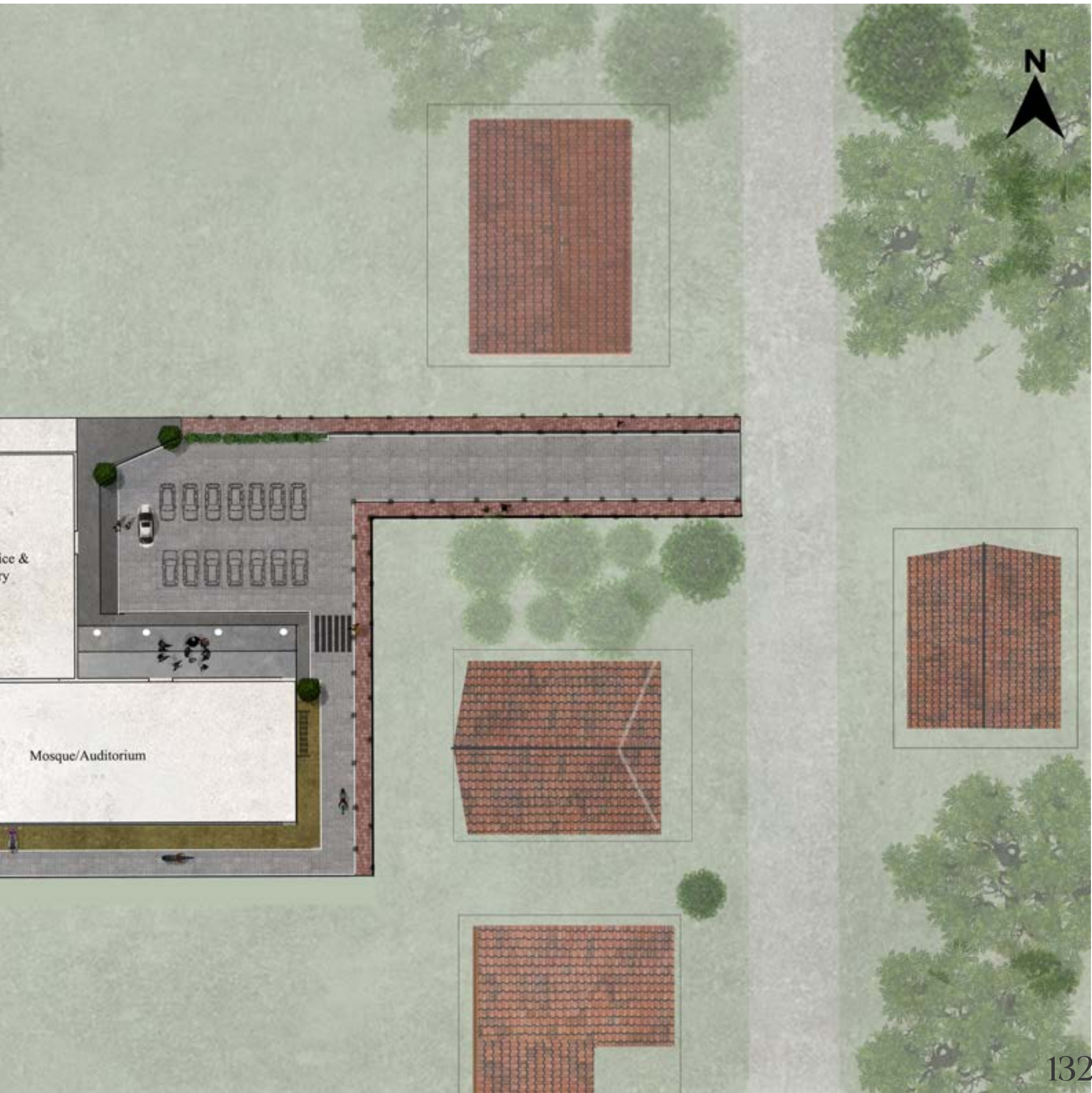


Jenis Ruang	Standar/Orang	Capacities	Total Area
Ruang Pendidikan Ali	1,20	38	17,10 m2
Ruang Pendidikan Usman	1,20	38	17,10 m2
Ruang Pendidikan Umar	1,20	38	17,10 m2
Ruang Pendidikan Abu Bakar	1,20	38	17,10 m2
Ruang Perpustakaan	2,40	40	96 m2
Laboratorium	2,40	40	96 m2
Ruang Kepala Sekolah	6	6	6 m2
Ruang Kantor	1,20	12	15 m2
Ruang Pertemuan	1,00	12	12 m2
Ruang Organisasi	2,40		
Ruang Ustad	3,0		
Hall			
Kantin	1,00	150	150 m2
Ruang Kesehatan	12	12	12 m2



SITEPLAN

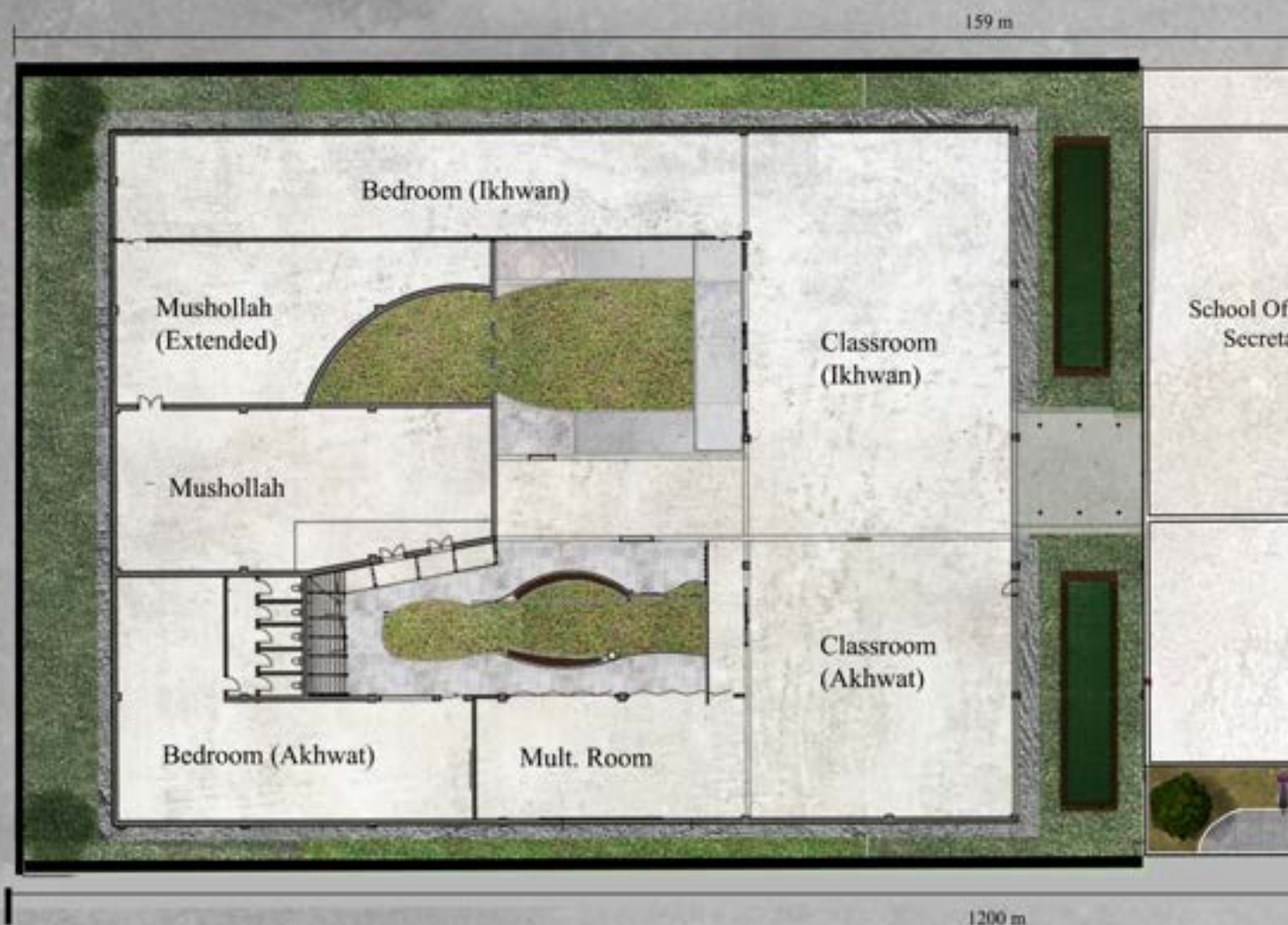




ice &
ry

Mosque/Auditorium

Located in Gading Village, Playen, Gunung Kidul with a location that is currently not yet densely populated, it provides many advantages. One of them is an area that is relatively quiet and free from pollution. Behind the site area is a large rice field, and next to the site is a garden with lots of teak trees. As a barrier to the site area and outside the site, a fairly high wall was built. This is to reduce the presence of wild animals into the school area.

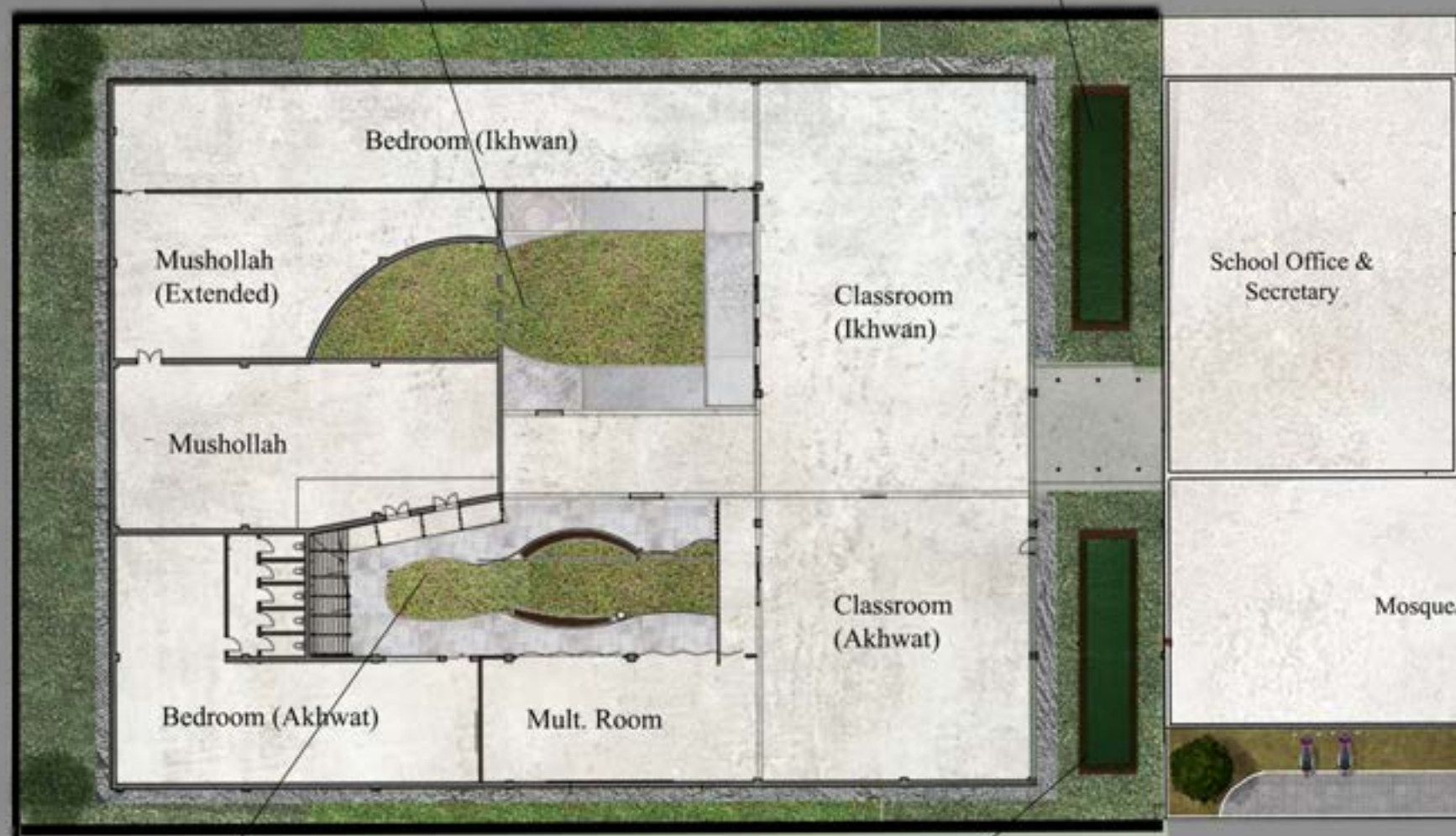




OPEN SPACE
AREA

SCHOOL VEGETATION
GARDEN

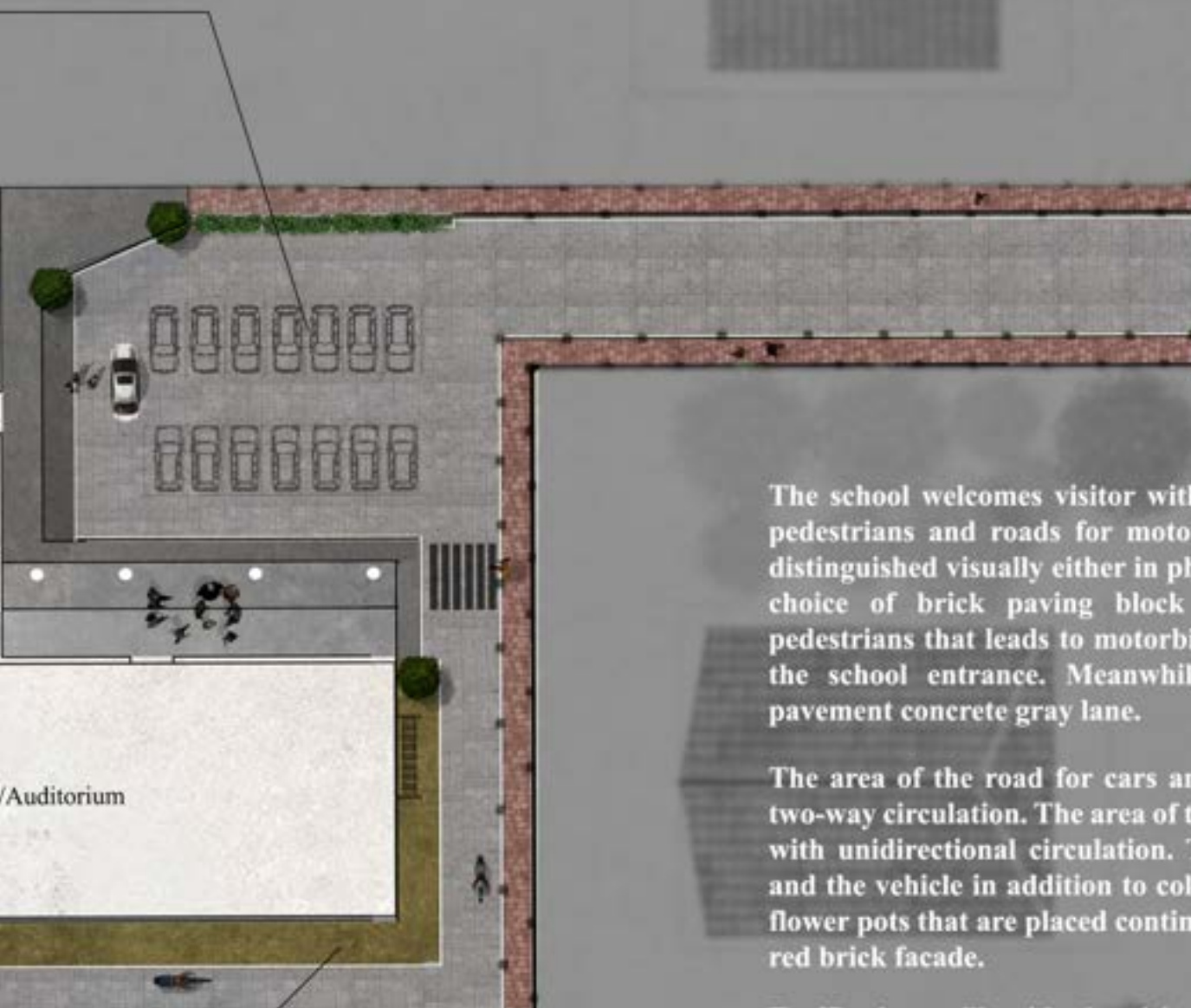
CAR PARKING



OPEN SPACE
AREA

SCHOOL VEGETATION
GARDEN

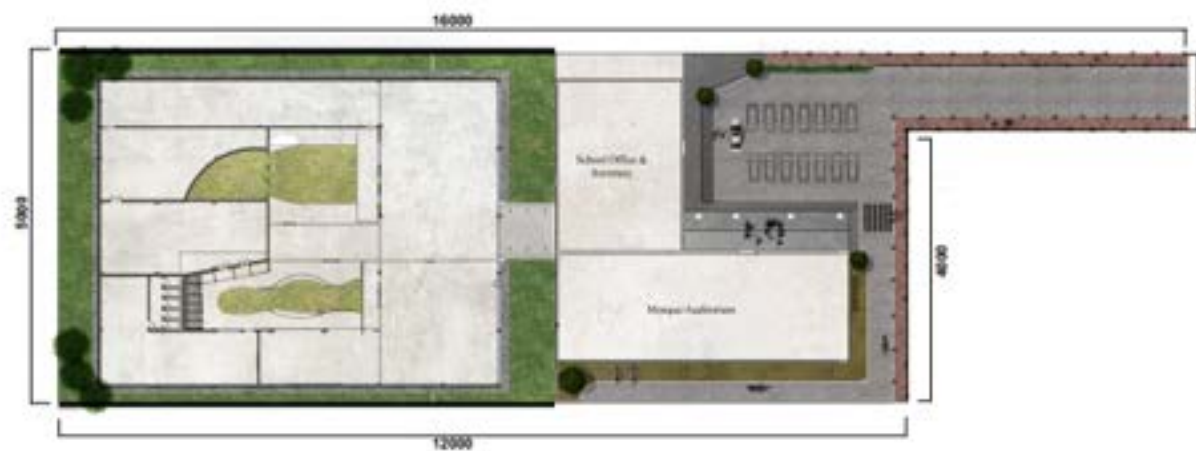
MOTOR
PARKING



The school welcomes visitor with a two-lane road that consist for pedestrians and roads for motorists. Both of them can be easily distinguished visually either in physical visuals or visual colors. The choice of brick paving block material becomes the pace of pedestrians that leads to motorbike parking and the zebra cross at the school entrance. Meanwhile, vehicle drivers will pass the pavement concrete gray lane.

The area of the road for cars and motorbikes is 7.5 meters. With two-way circulation. The area of the pathways is 1.7 meters/pathway with unidirectional circulation. The barrier between the pathway and the vehicle in addition to color and texture is a water lane and flower pots that are placed continuously leading to a building with a red brick facade.

Traffic signs will guide the visitor to tell visually about the spaces. For example, the zebra cross is a connection between the entrance pathway to the prayer room pathway that leads to the school entrance. Bollard as a barrier between the road and parking area.



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PROJECT

DESIGN OF ISLAMIC BOARDING
SCHOOL FOR THE DEAF IN
YOGYAKARTA
WITH VISUAL ASPECT APPROACH

NAME

IMARA DZAKIA ARIYADI
(17512115)

SUPERVISOR

Dr. Yulianto P. Prihatmaji, S.T.,
M.T., IAI, IPM.

DRAWING TITLE

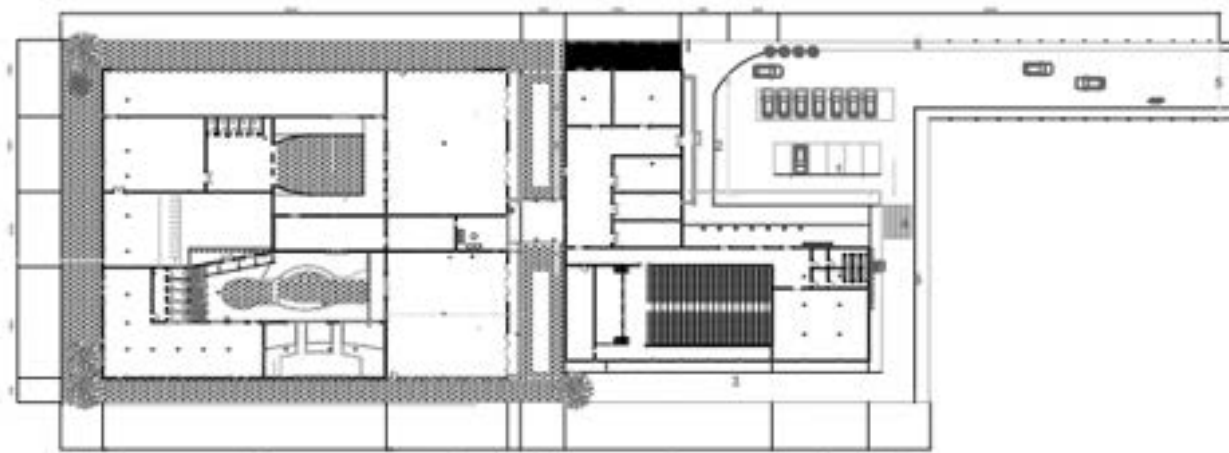
COLOR SITEPLAN

SCALE

1:500



NOTES



LEGEND :
 1. CAR PARKING
 2. DROP OFF (SCHOOL ENTRANCE)
 3. BIKERS PARKING
 4. ZEBRA CROSS
 5. ENTRANCE GATE
 6. PATHWAY



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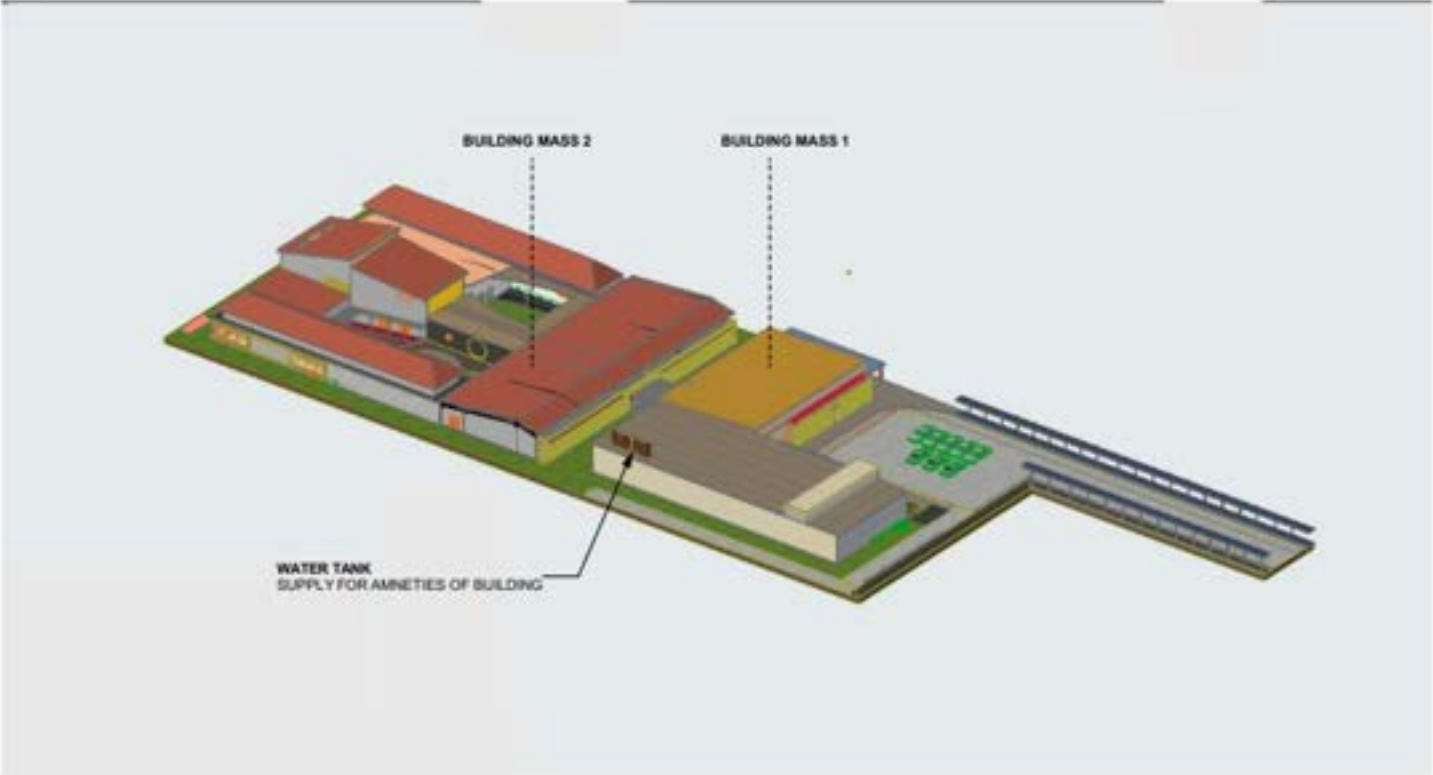
SITEPLAN

SCALE

1:500



NOTES



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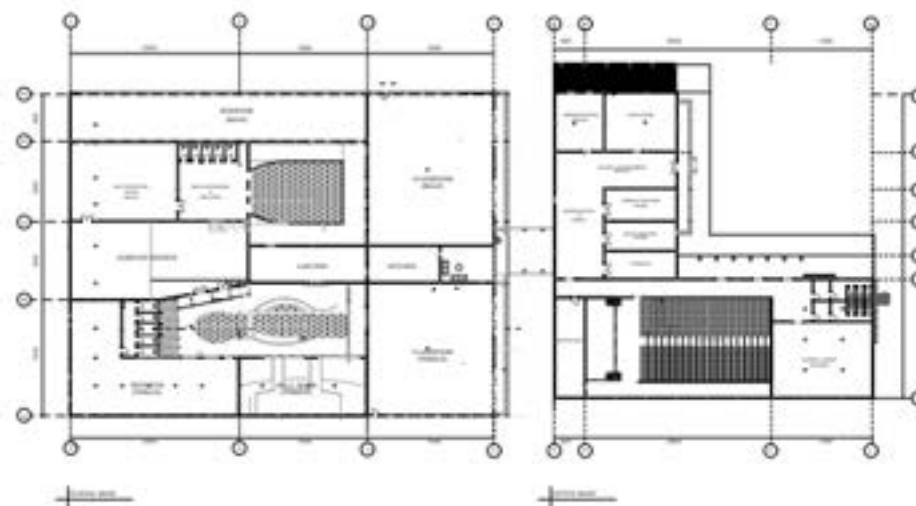
Dr. Yulianto P. Prihatmaji, S.T. ,
M.T. , IAI, IPM.

DRAWING TITLE

AXONOMETRIC

SCALE

NOTES



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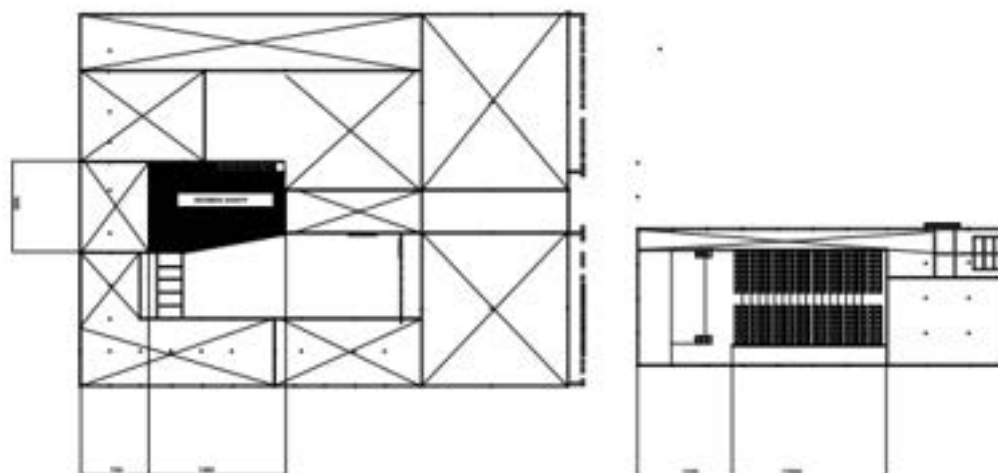
GROUND FLOOR

SCALE

1:500



NOTES



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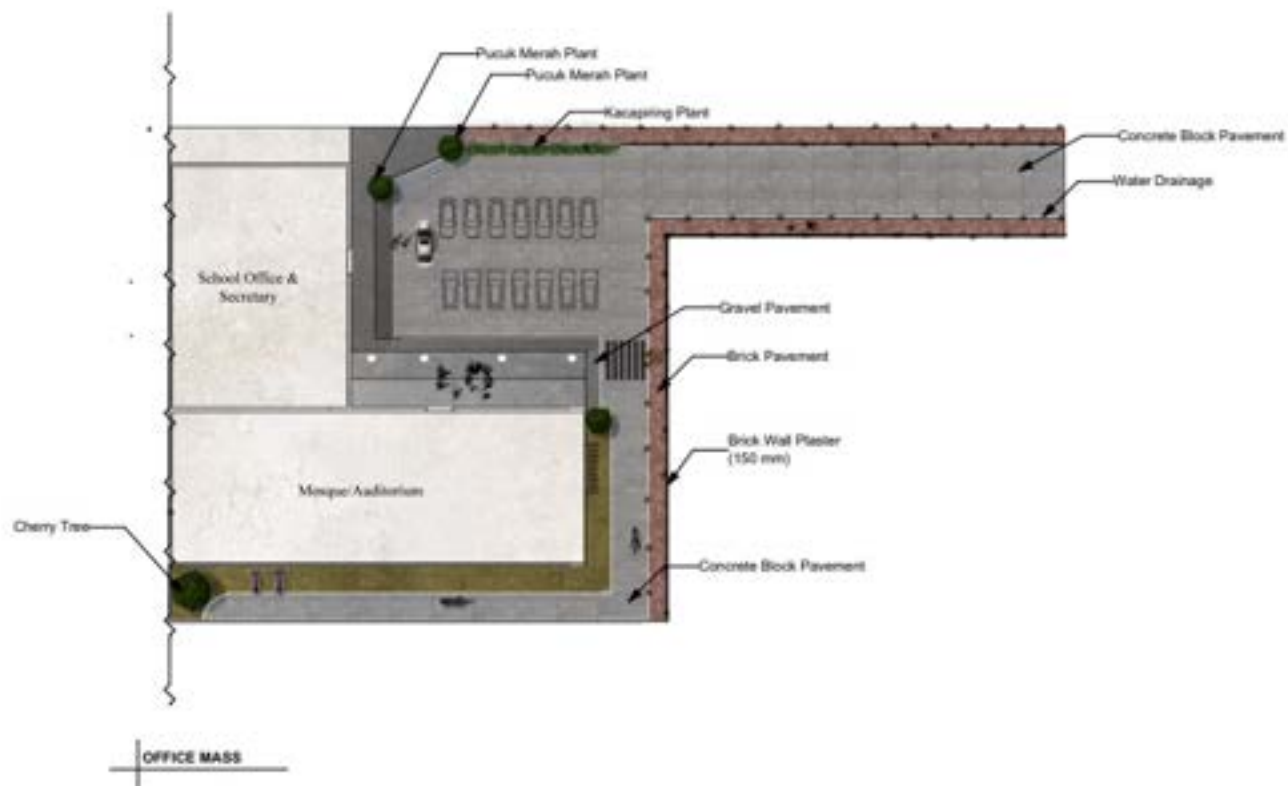
SECOND FLOORPLAN

SCALE

1:400



NOTES



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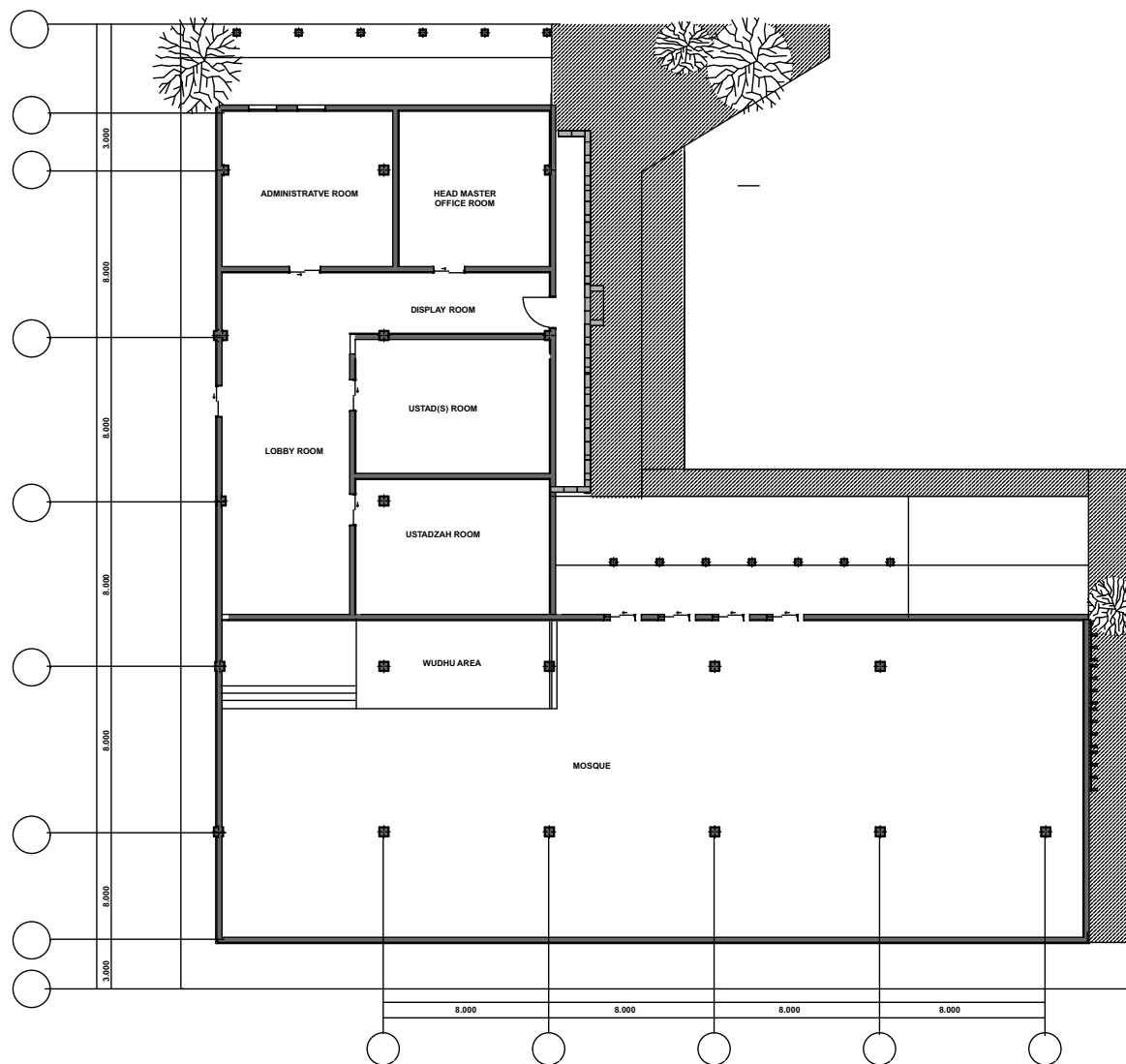
DARUL AHSOM OFFICE
PLAN (COLOR)

SCALE

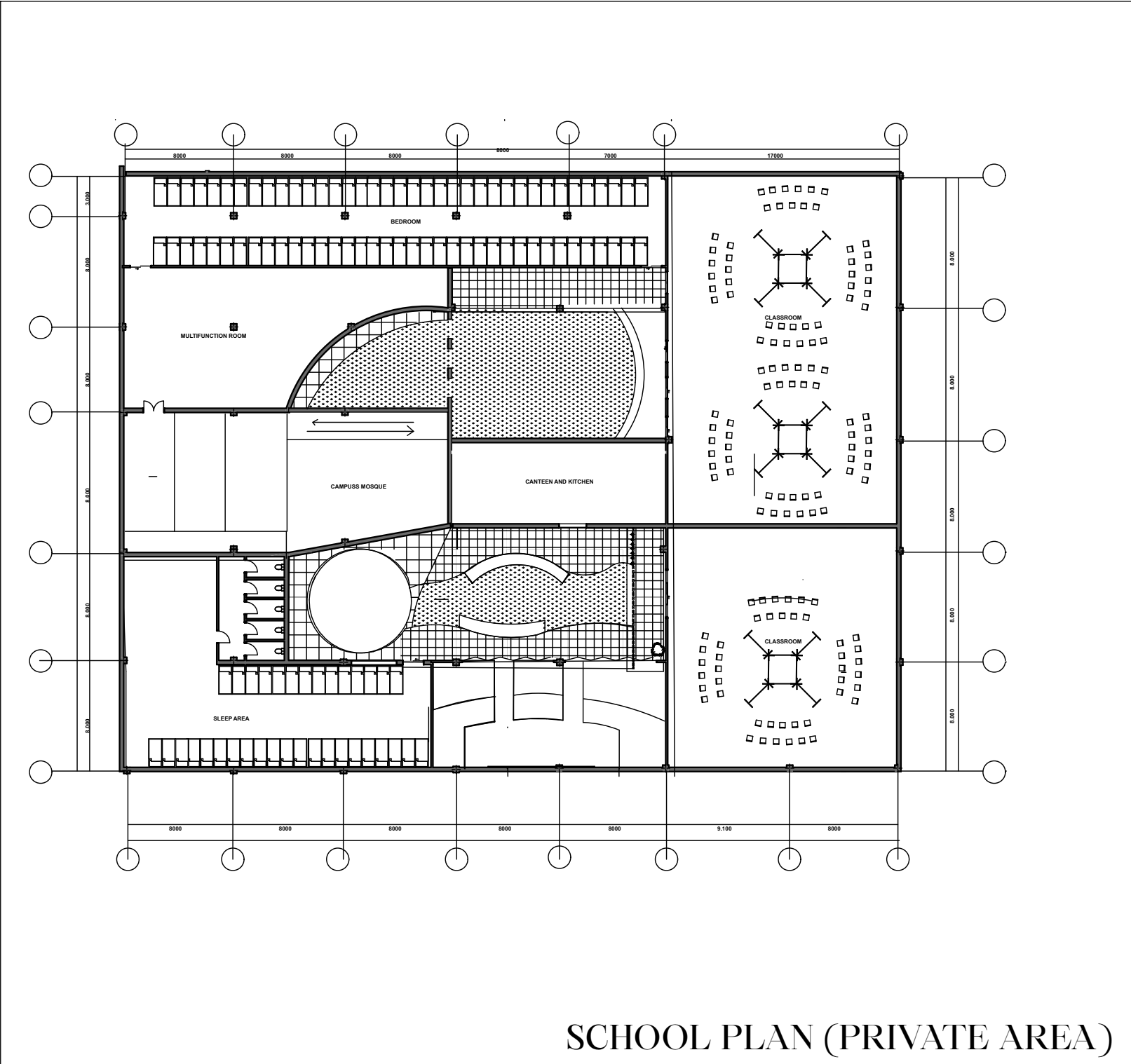
1:260



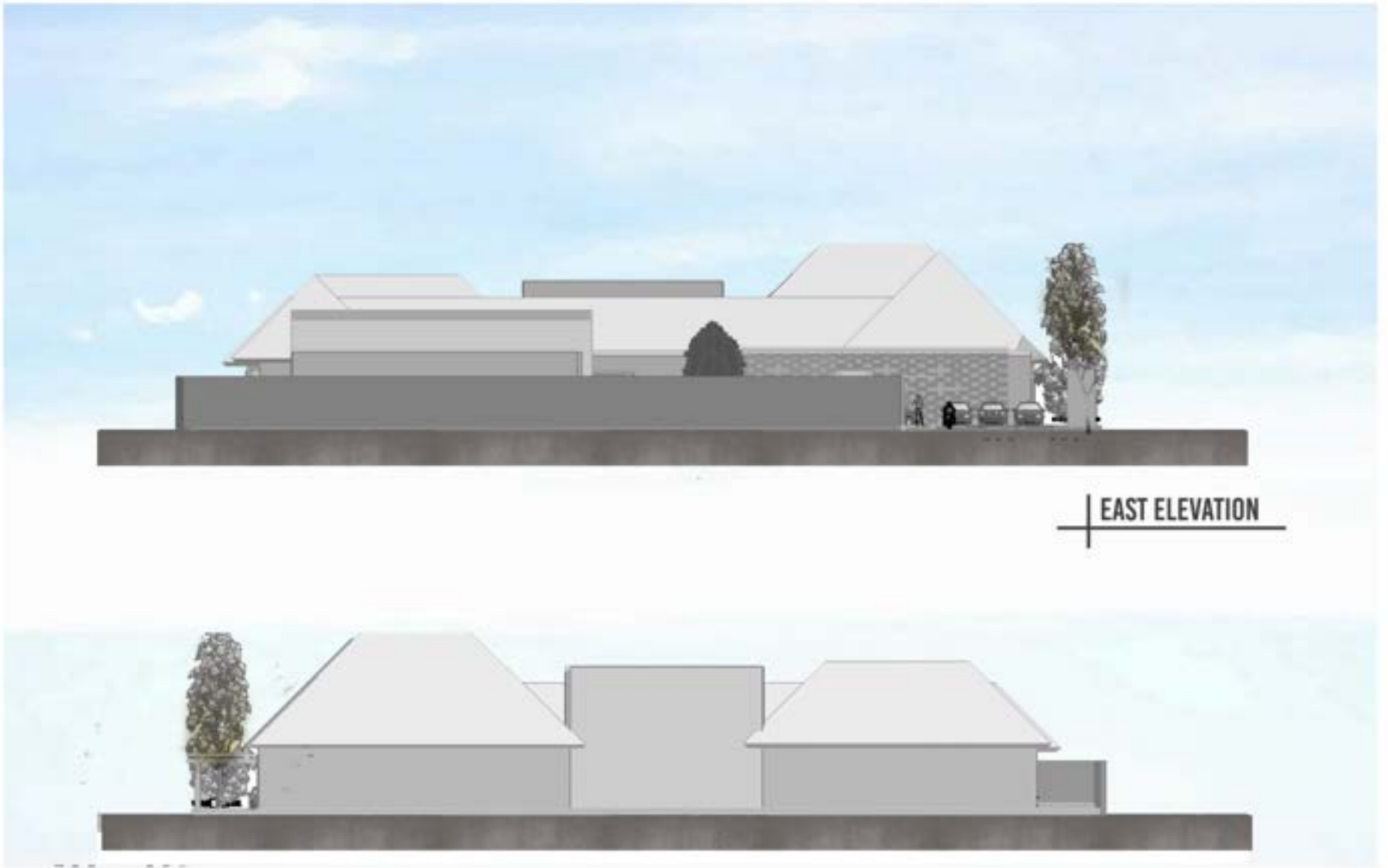
NOTES



SCHOOL PLAN (PUBLIC AREA)



SCHOOL PLAN (PRIVATE AREA)



EAST ELEVATION

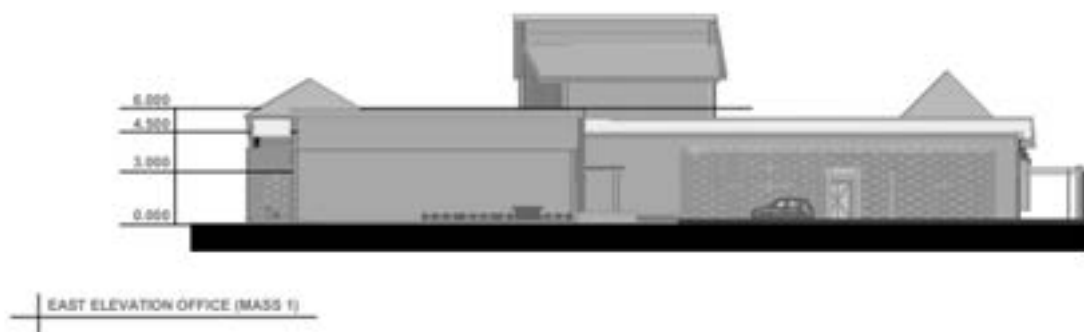
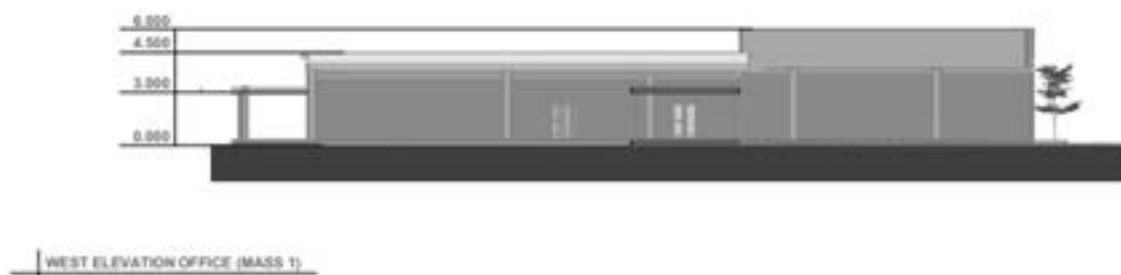
WEST ELEVATION



| SOUTH ELEVATION



| NORTH ELEVATION



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DRAWING TITLE

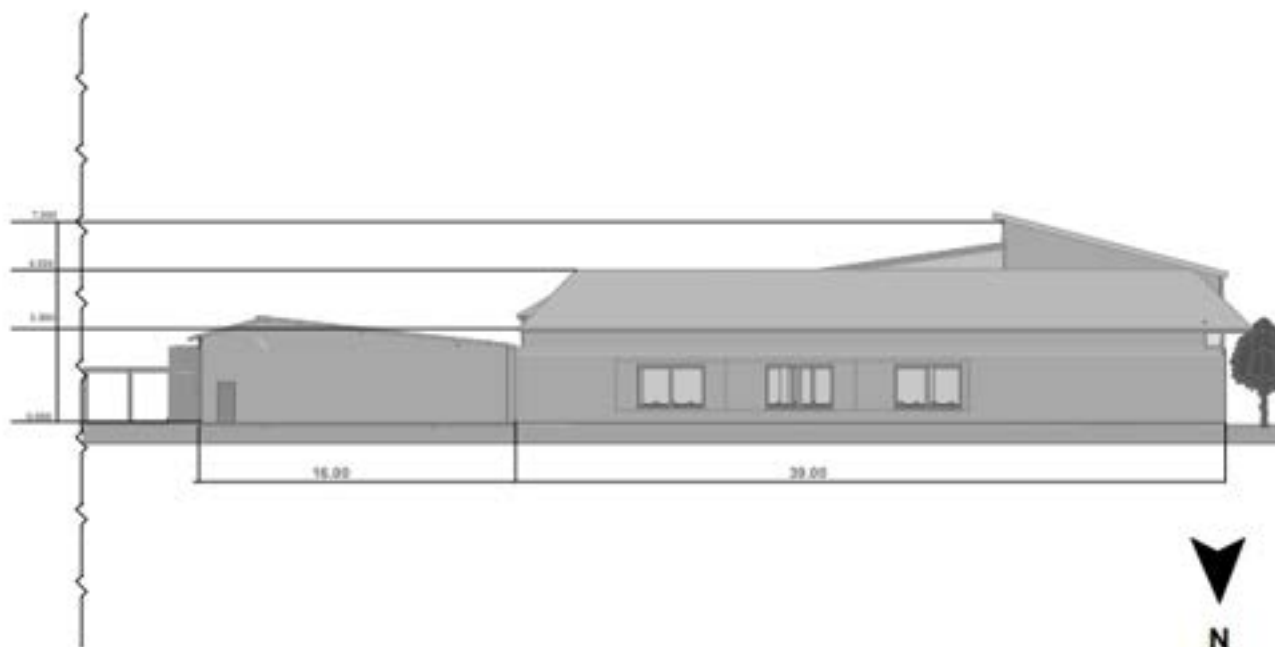
EAST AND WEST
ELEVATION
OFFICE MASS (MASS 1)

SCALE

1:150



NOTES



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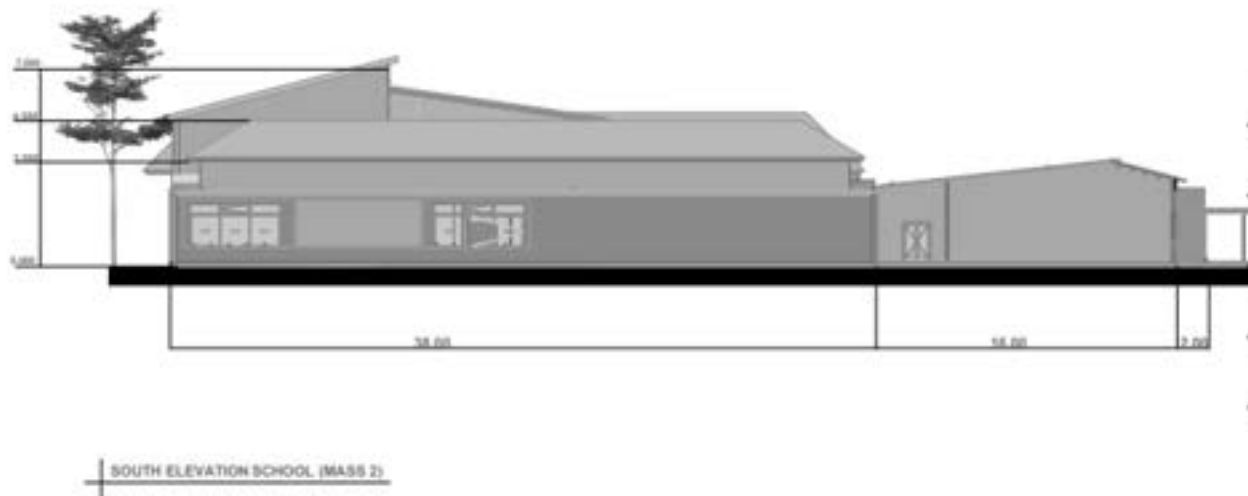
DRAWING TITLE

NORTH ELEVATION
SCHOOL MASS (MASS 2)

SCALE

1:200

NOTES



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DRAWING TITLE

SOUTH ELEVATION
SCHOOL MASS (MASS 2)

SCALE

1:200



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DRAWING TITLE

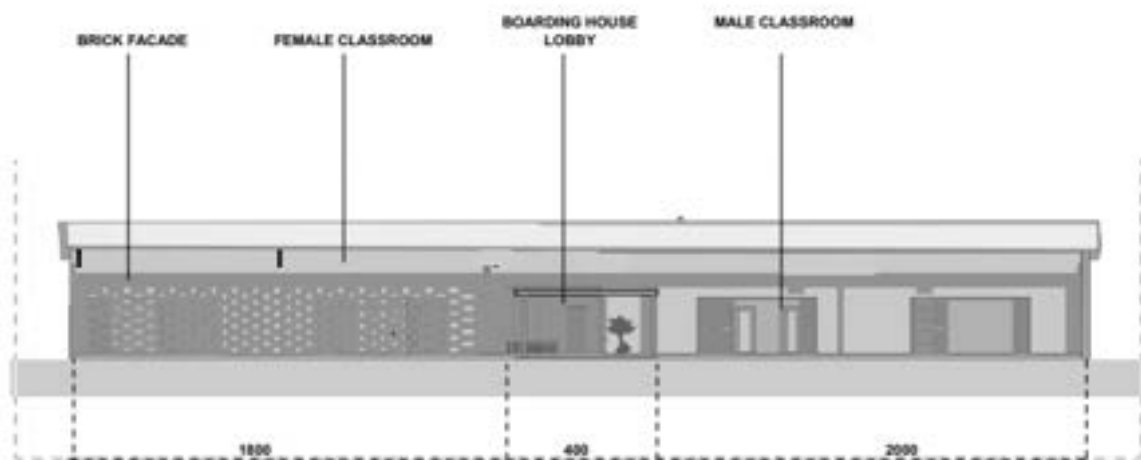
SECTION 1-1'

SCALE

1:300



NOTES



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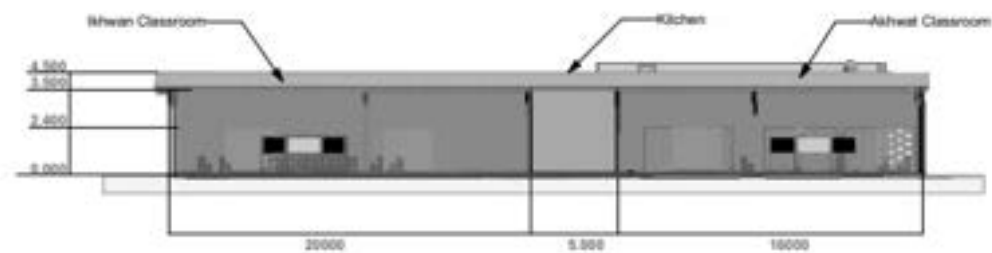
DRAWING TITLE

EAST ELEVATION AND
DETAIL SCHOOL
MASS

SCALE

1:150 ➤ N

NOTES



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DRAWING TITLE

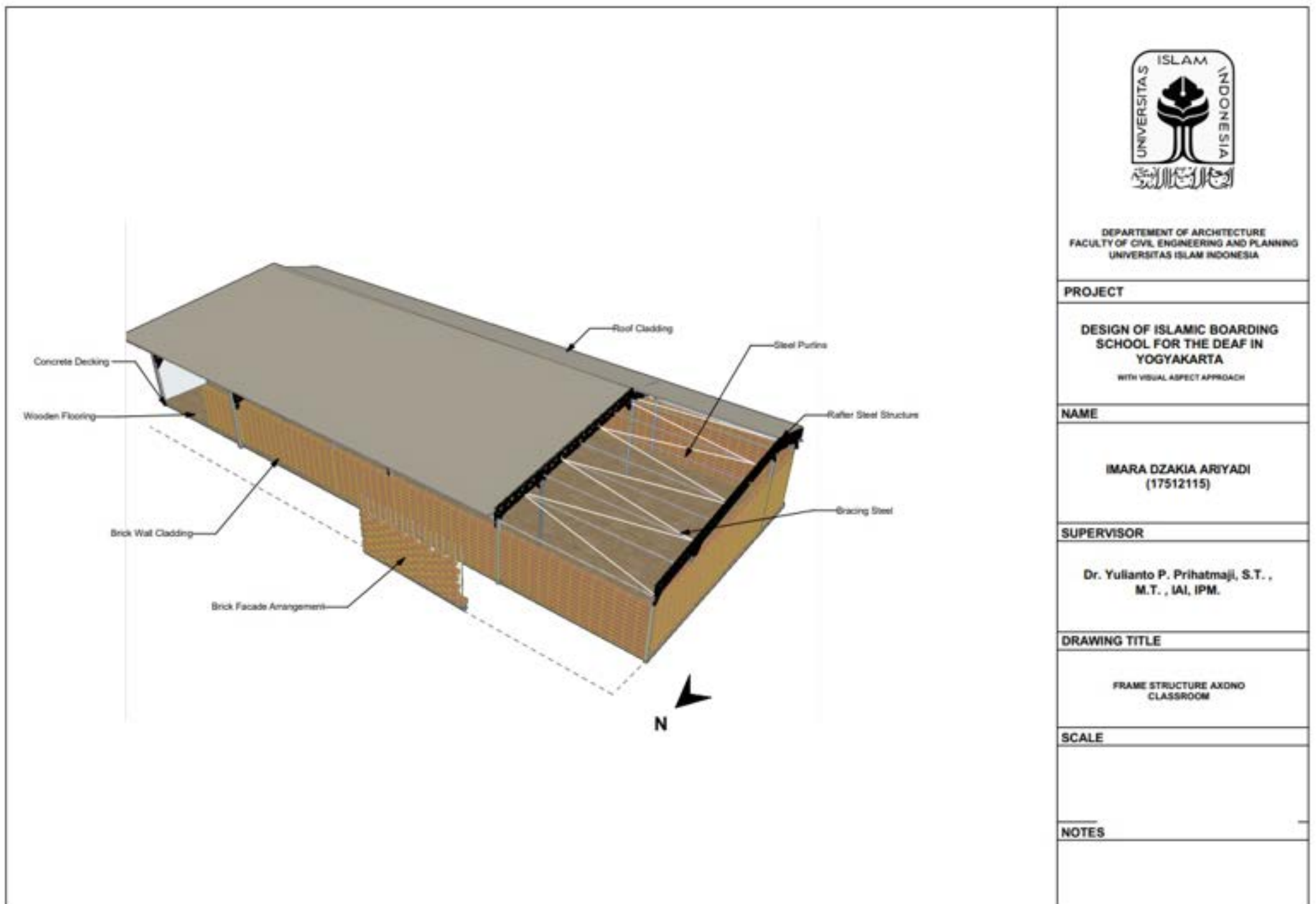
PARTIAL SECTION HORIZONTAL (MASS 2)
CLASSROOM

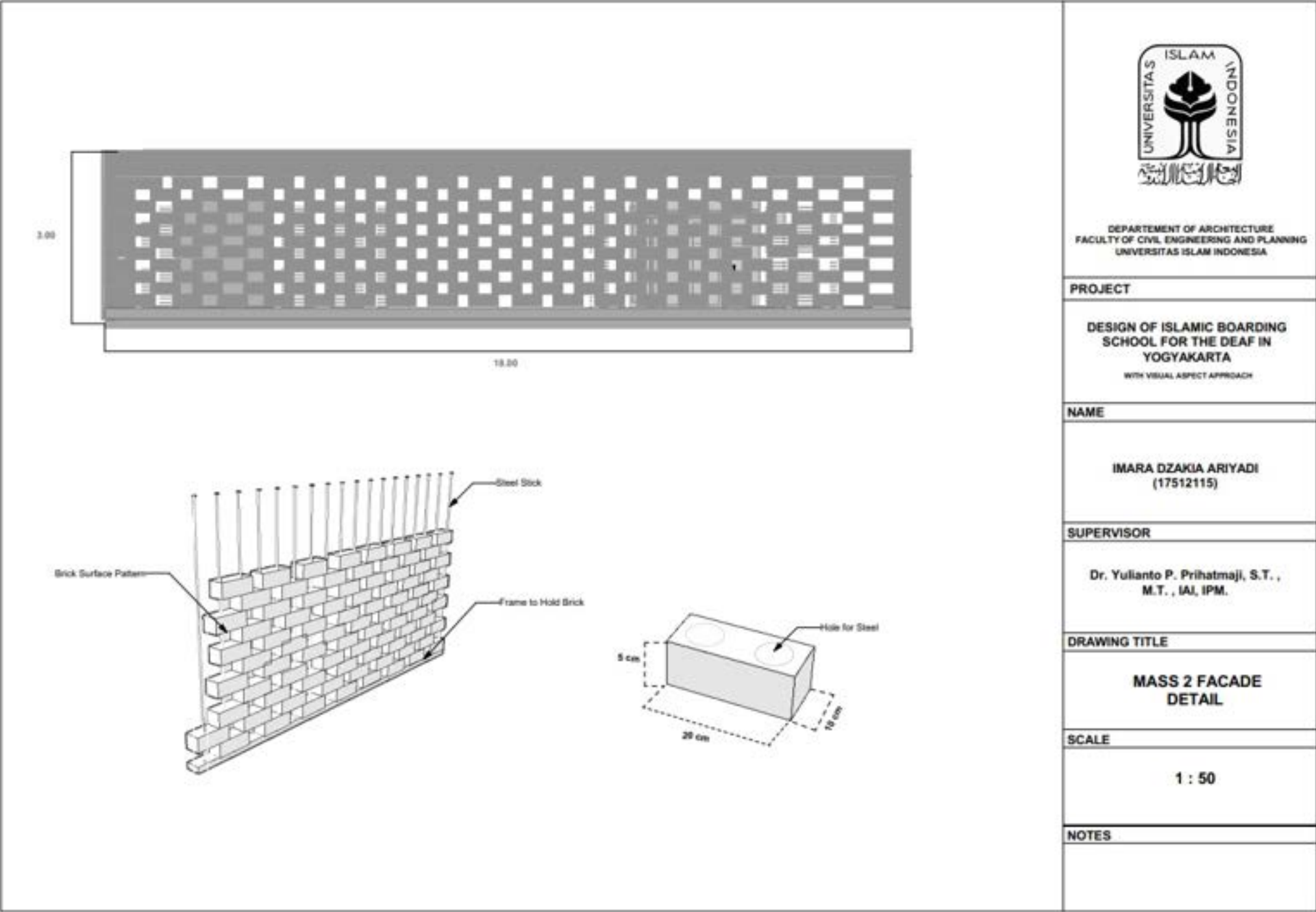
SCALE

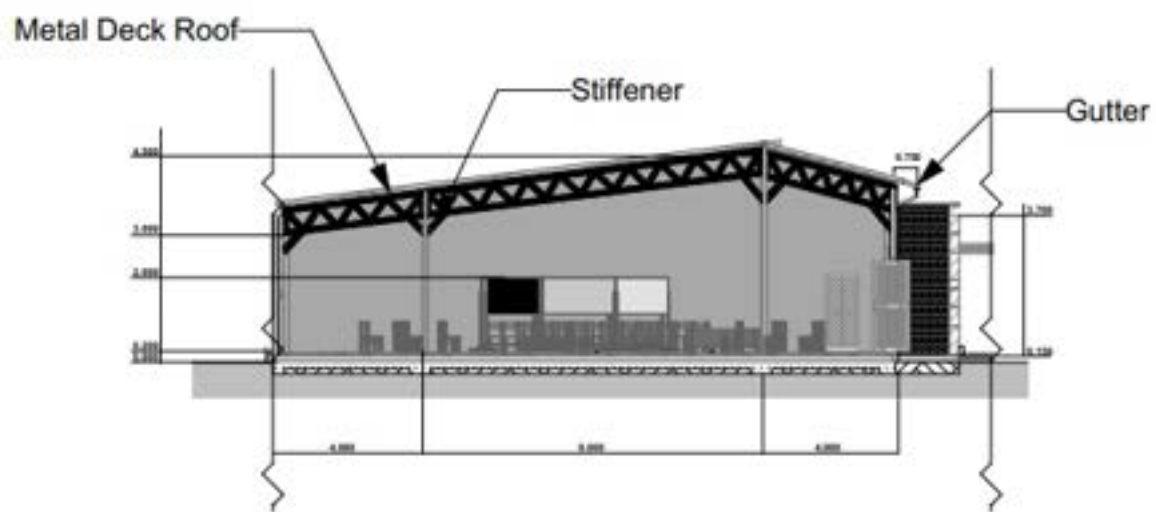
1:200



NOTES







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DRAWING TITLE

CLASSROOM SECTION
DETAIL

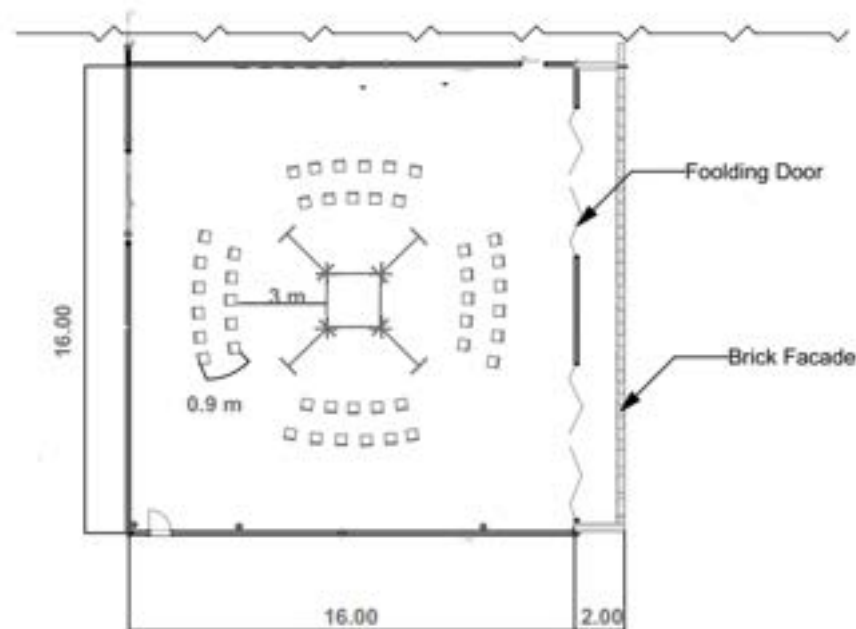
SCALE

1:100

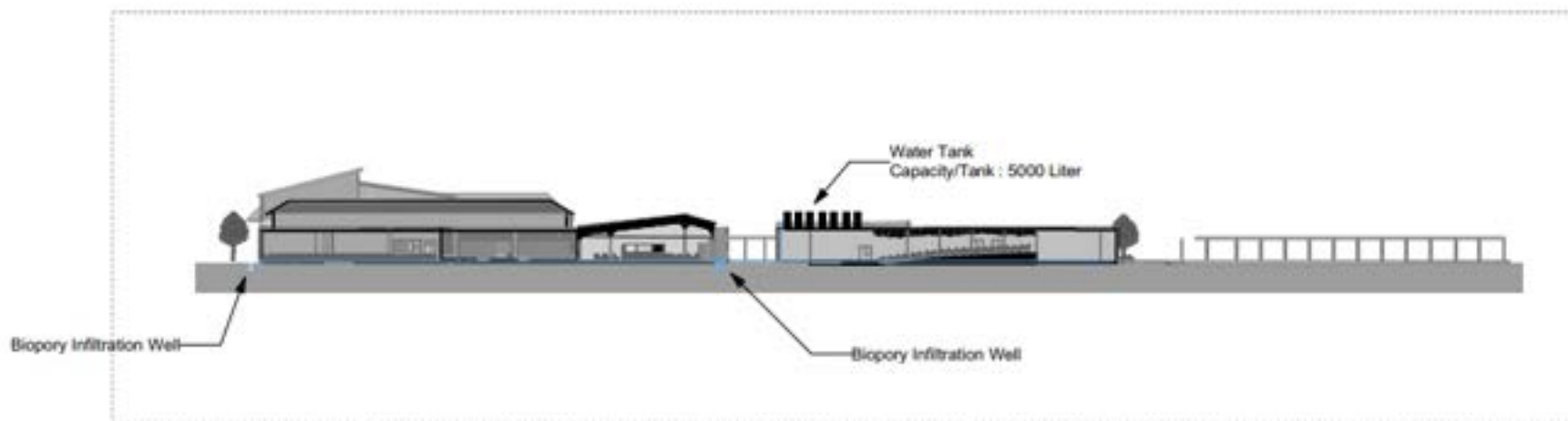


NOTE9

The classroom layout arrangement modified the U-shape arrangement on which is based on Deafspace Guidelines Standard. Meanwhile to achieve visual comfort and avoid visual blocking, the distance between the chairs and the blackboard is 3 meters with a minimum distance between seats of 0.9 m.



To avoid thermal transfer but still maintain the sun lighting, the folding door was chosen as an opening door suitable for classrooms, besides that the classroom can be used as a semi-outdoor. Another solution to prevent overheating is the design of a brick facade composed as high as the wall, which is able to provide enough shadow so that heat can be reduced. In addition, other uses extend out to afford a degree of privacy.



Water Consumption Calculation :

Water used 1 people estimation : 100 liter (SNI 03-7065-2005)

Water Consumption for ablution : 5 liter/person x 7 times = 35 liter

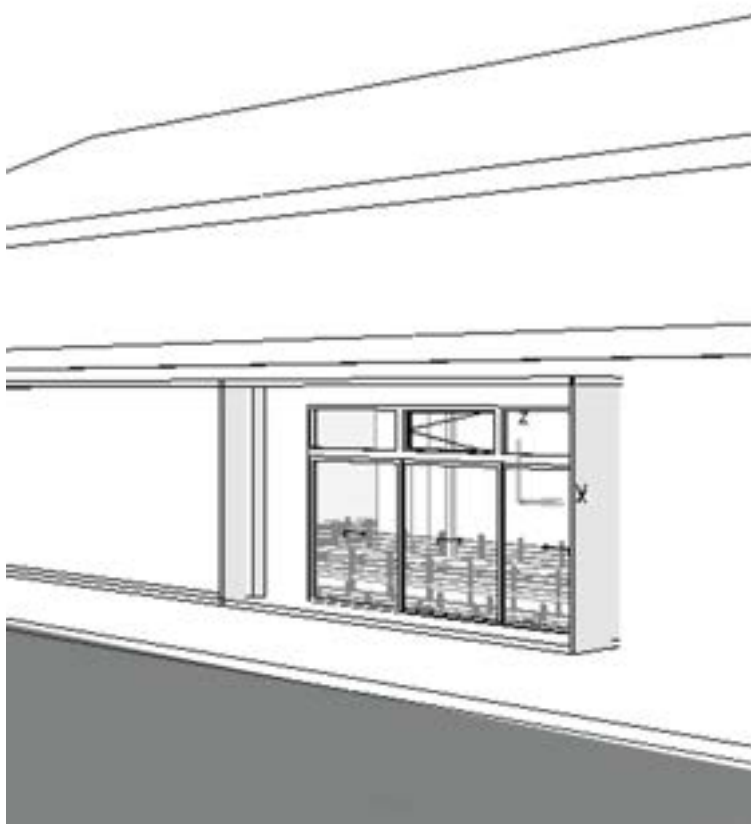
250 people x 135 liter : 33750 liter

Water Tank Specification

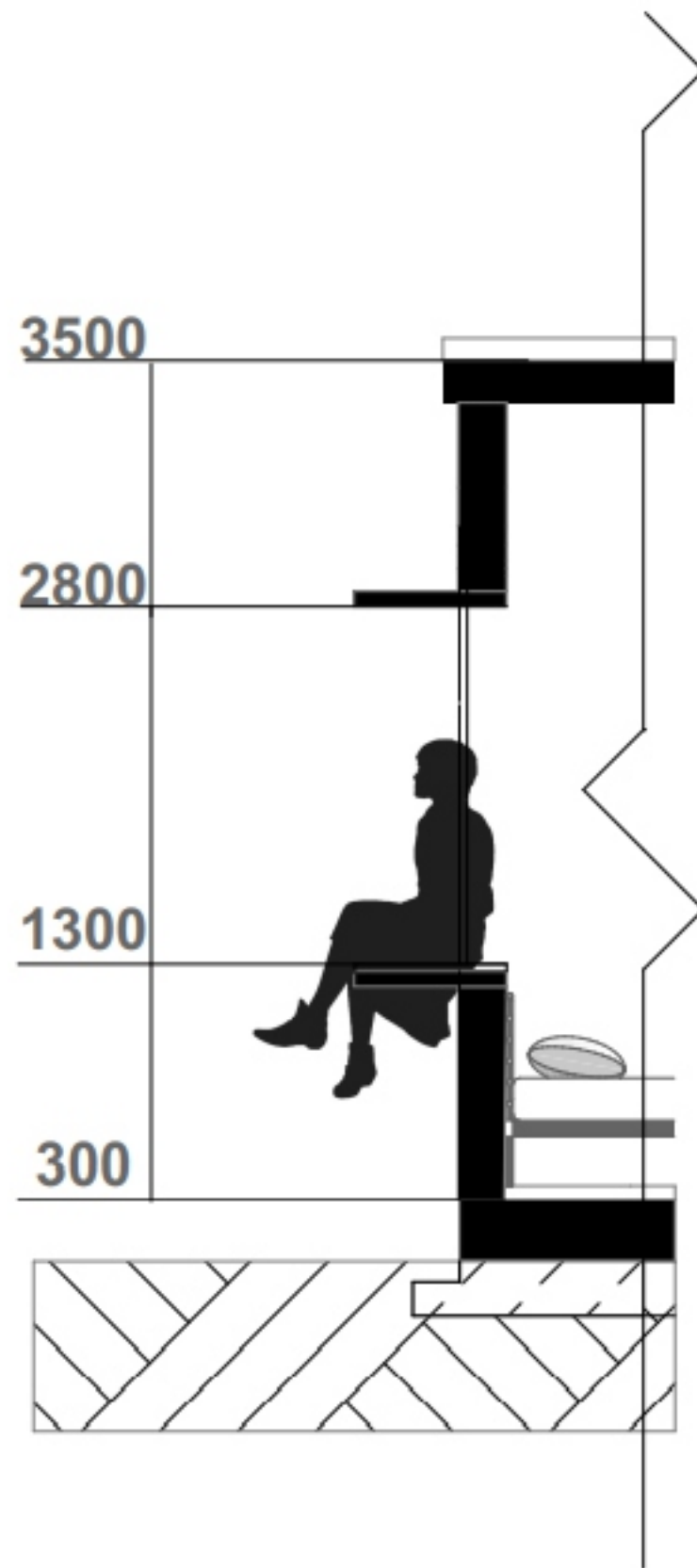
Material : FRP (Fiberglass Reinforced Plastic)

Color : Grey

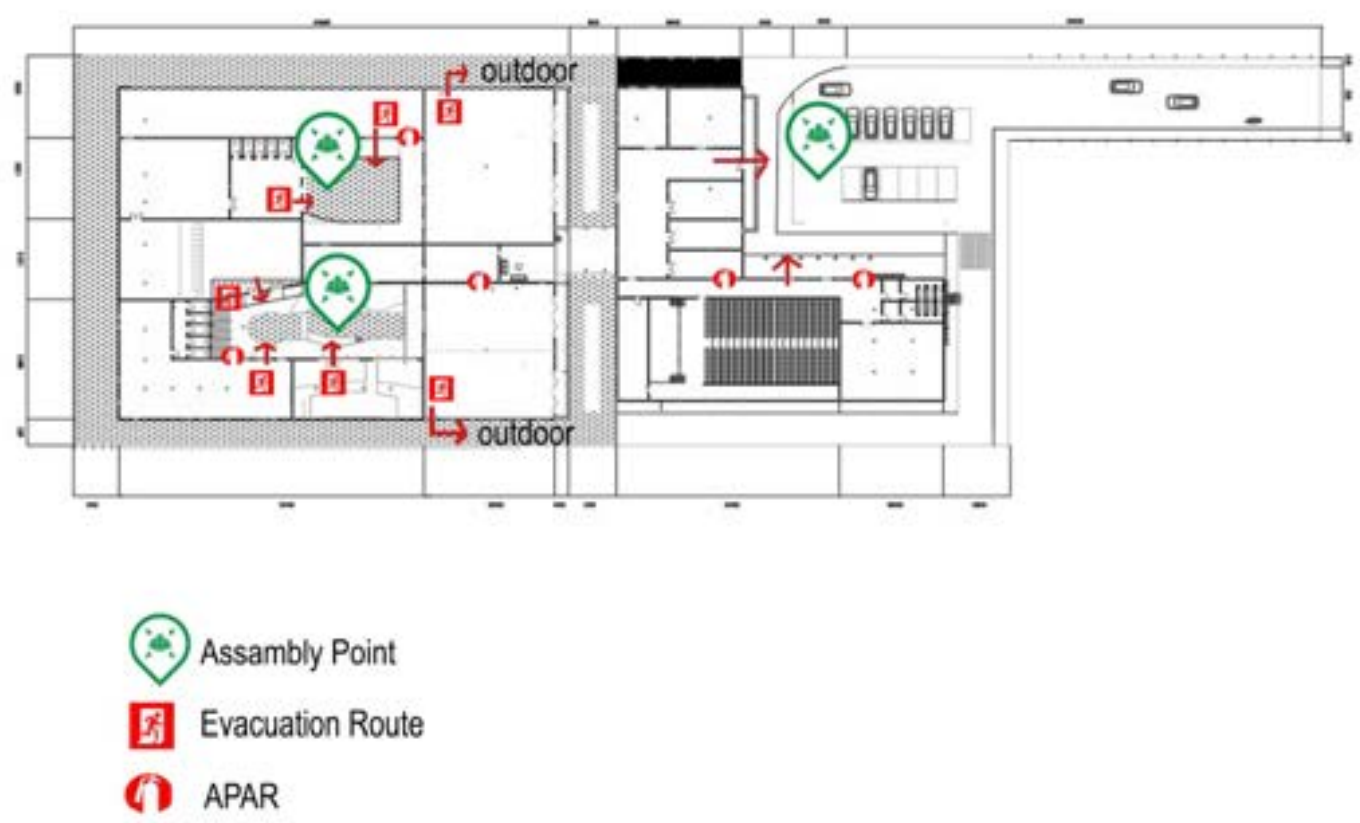
Volume : 500 Liter - 5.000 Liter

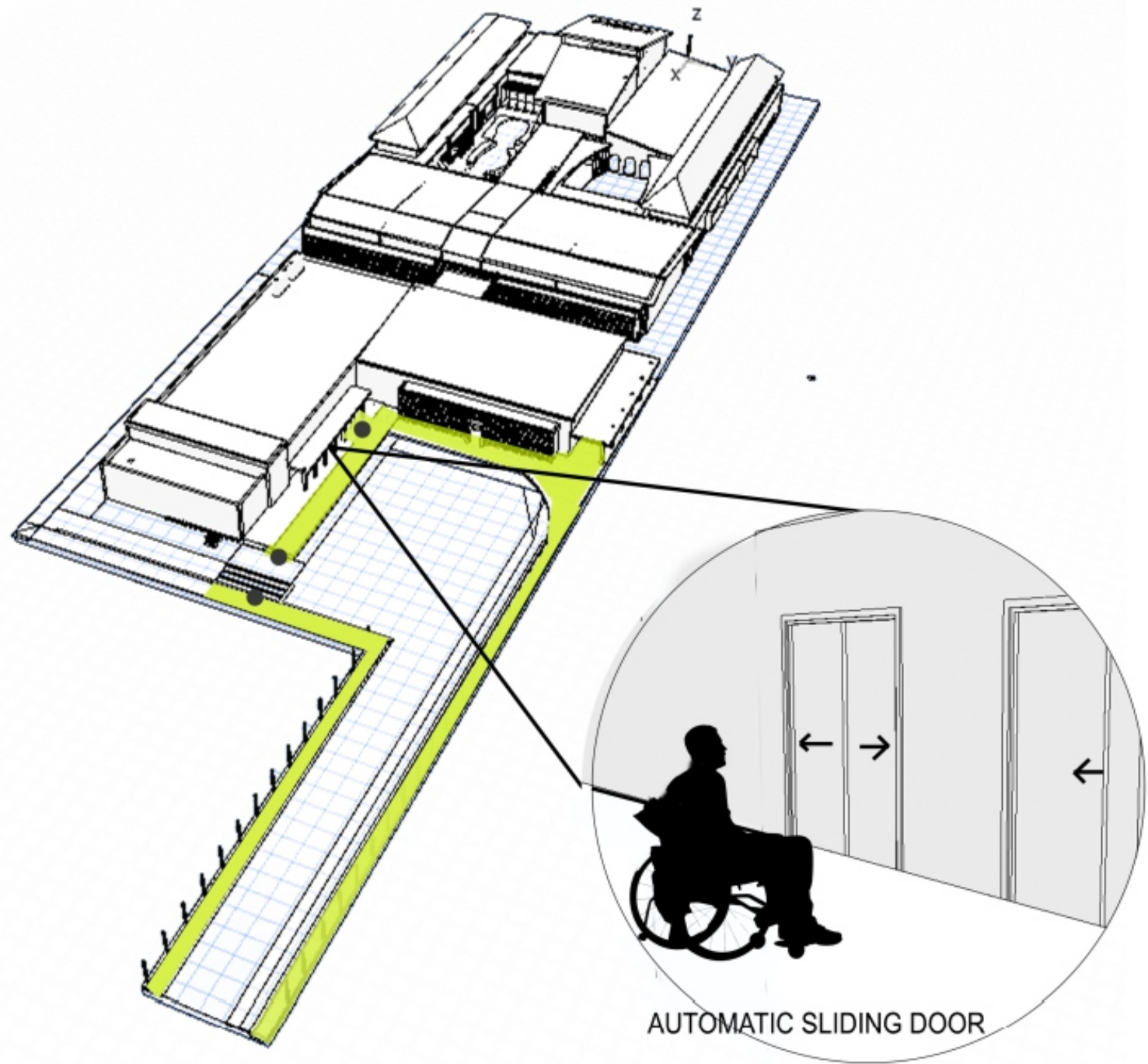


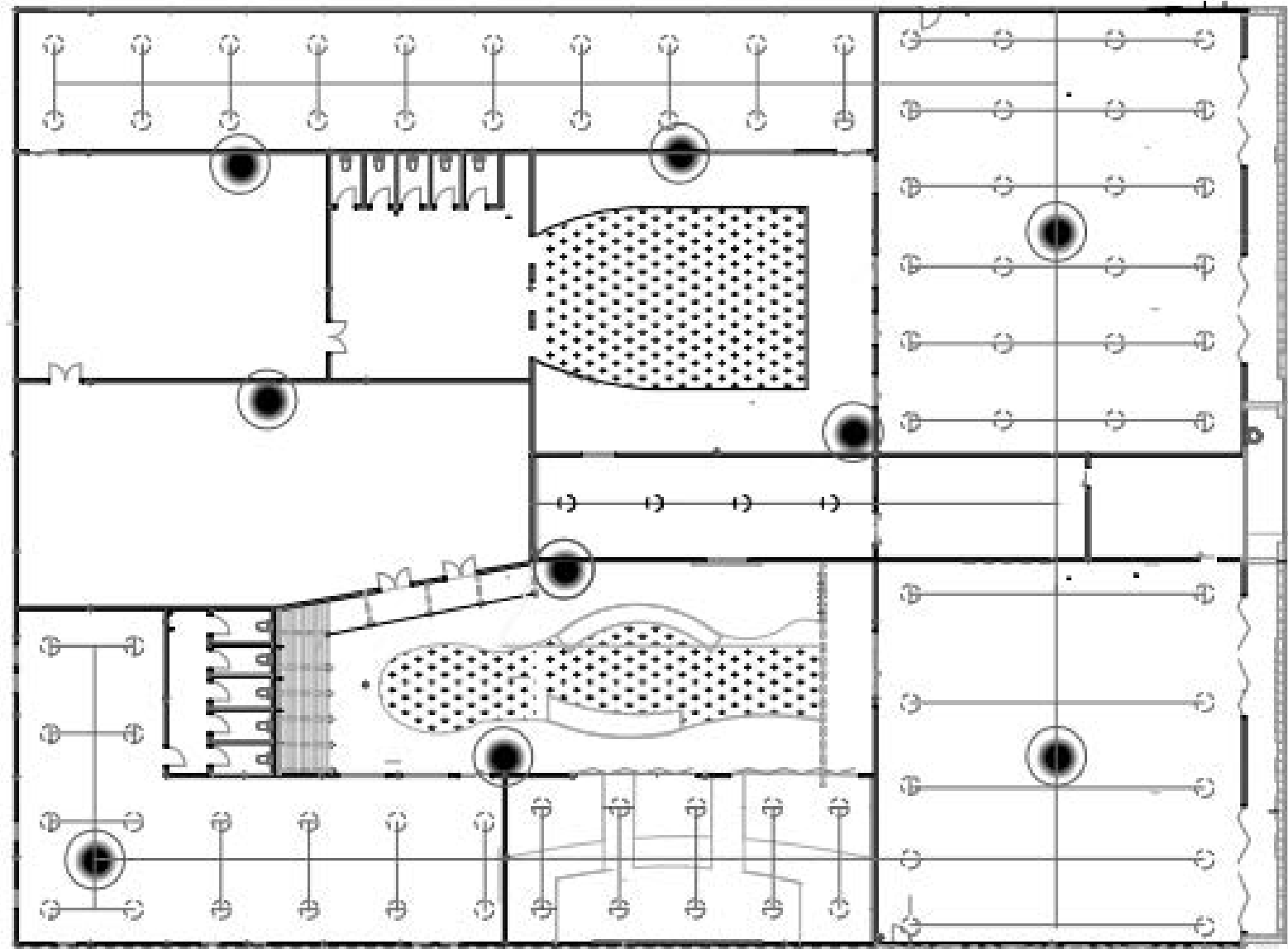
This section located at the bedroom window bay with the speciality the sit stand. The length of the opening about 1.500 which ara can be also for emergency escape. This opening facing the outdoor of the school mass.

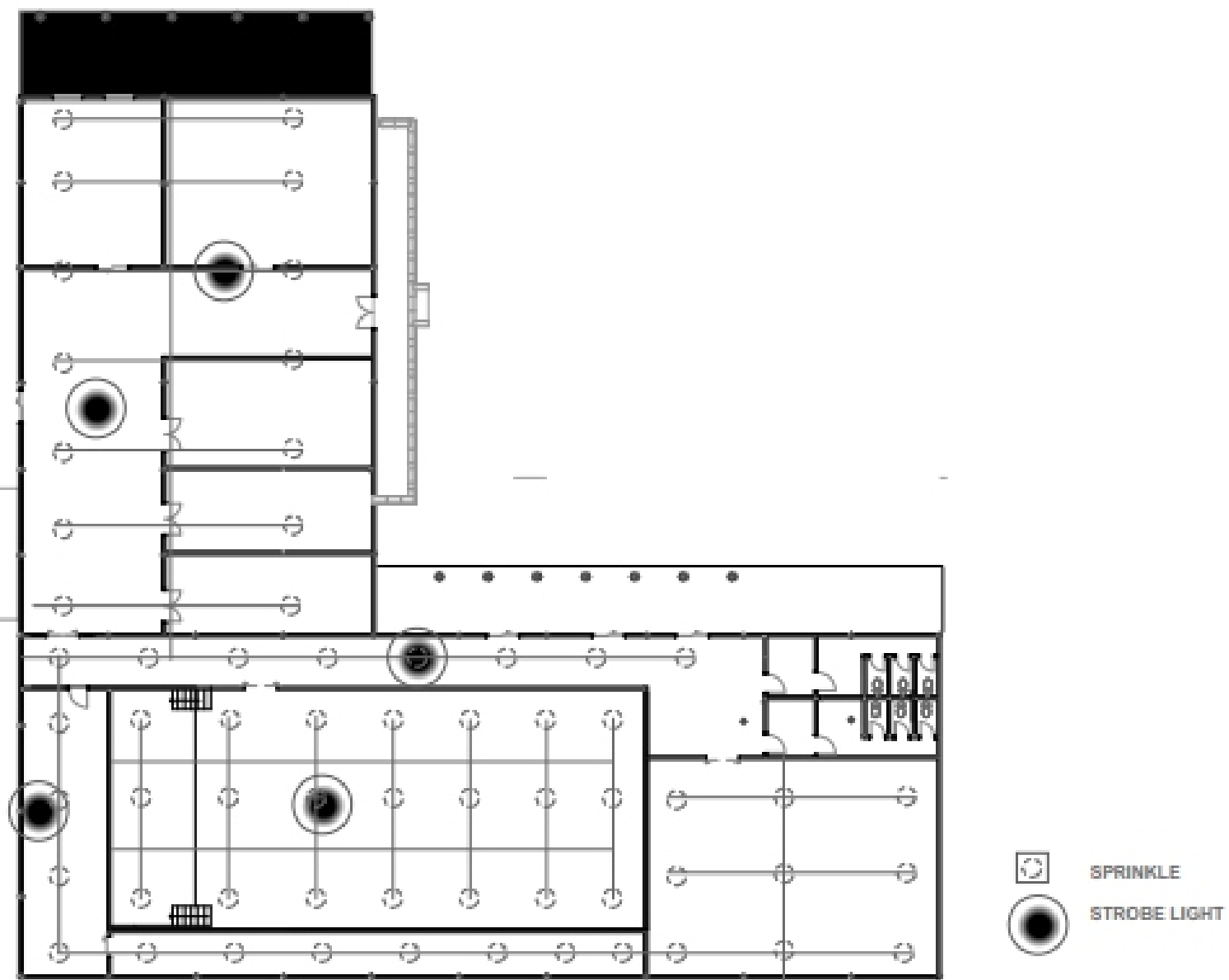


EMERGENCY AND SPECIAL TREATMENT FOR DISSABILITIES









06

DESIGN EVALUATION

Conclusion of the supervisor's evaluative review.

1. Question From Jury
2. Design Responses.

DESIGN EVALUATION

Conclusion Review

Based on the result of the evaluation, there are several part that are responded tby examiner and supervisor. The responses are aim to make the design better and find a optimal solution thru the design problems. Here are some descriptions need to be added:

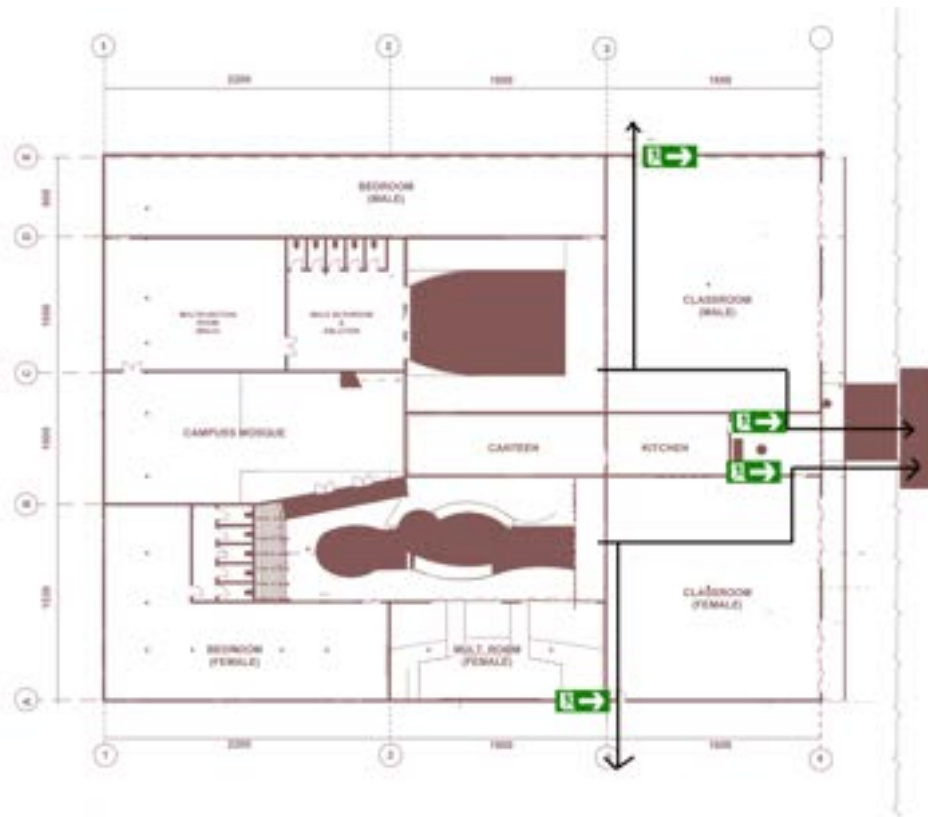
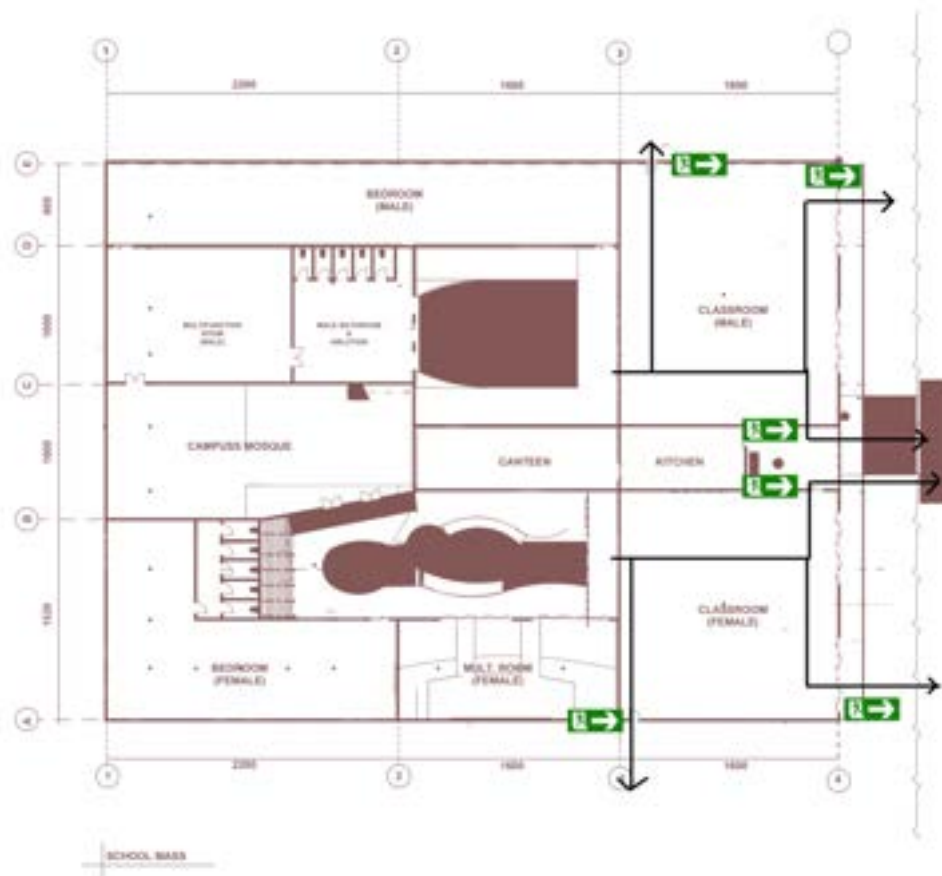
Comments :

1. The brick facade on classroom should be modified because its obstructed the evacuation escape door. The brick facade also block the visual of the garden.
2. The innercourt respond thru the wether of tropical climate condition.
3. Selected door are too pricey especially the rotating door.



1. Brick Facade and Evacuation Route

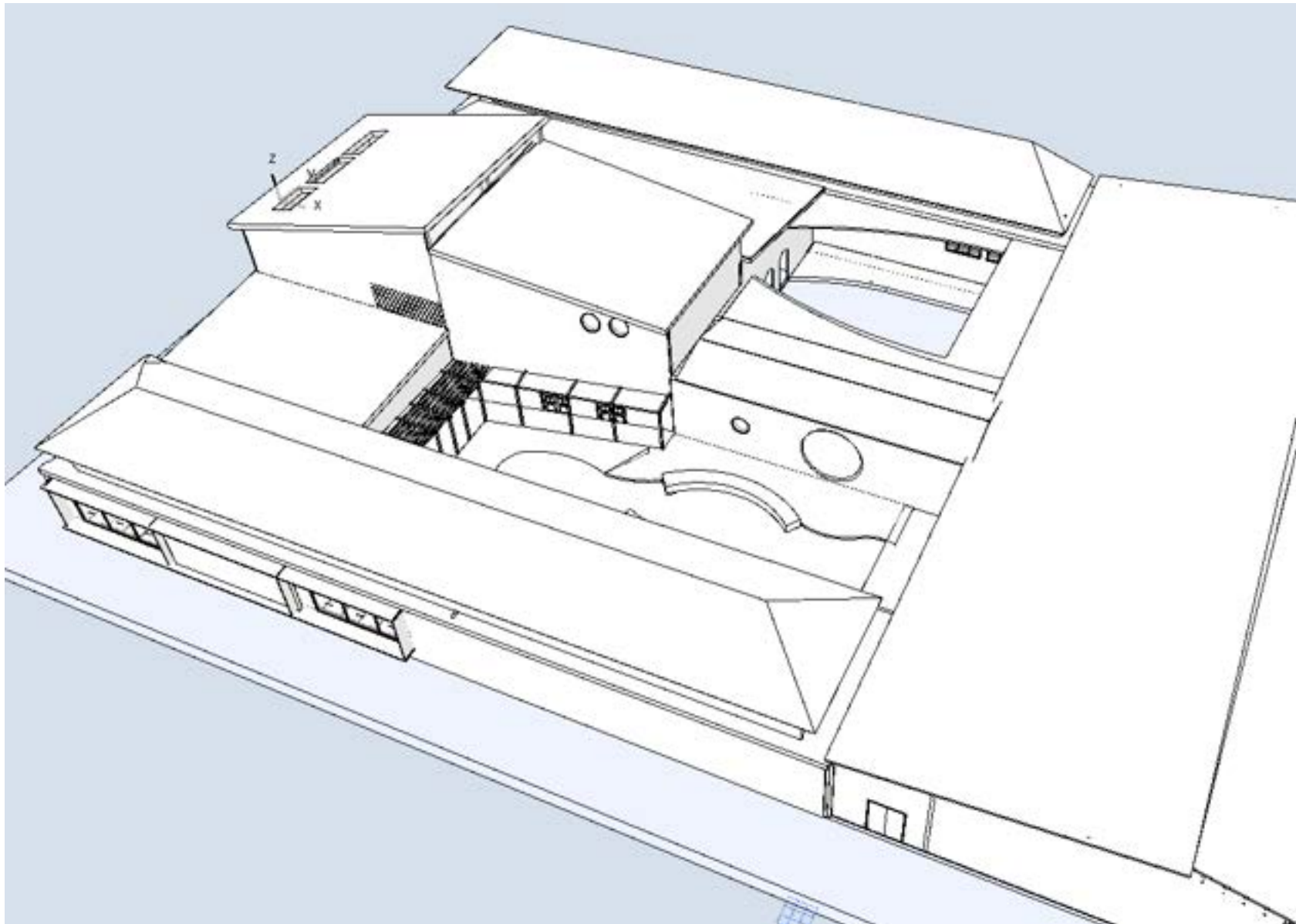




The picture is before and after evacuation escape door. Access, which was previously only 2 doors per space, is now added by one door with access to the extraculiler park. Besides that, based on the Journal of Fire Performance of Escape Route doors in Cultural Heritage Buildings A state-of-art review, concerning the technical methods for upgrading of the door leaf, both the method for mounting of new fire-rated glass panes and the way of using fire retardant paint are aspects that need further attention with regards to the reliability of the alleged upgrading of the fire performance.

2. Innercourt Respond the Tropical Climate

The change in the shape of the roof on the canteen from a flat roof to a gable roof due to Indonesia's tropical climate and align the shape of the roof of the surrounding buildings so that the roof becomes a gable and lime roof. Having a sloping shape, the gable roof is also able to absorb heat to the maximum so that the inside of your house will feel cooler. What's more, if you install the ceiling of the house at the bottom of the roof, where the room below will be cooler because the hot air coming in from outside will be locked in the ceiling area.



Adding Sun shading

BriseSoleil

Sunscreen solutions consist of ellipse-shaped or glass louvres that provide ample shade to enjoy. Available with both fixed and movable louvres, the versatile aluminium system can be adjusted to fit any project.



3. Door Selection



Door designs that previously used rotating doors have now switched to double doors. With this, the door has enough area for two people to pass through. Previously, the rotating door was located at the entrance to the Auditorium and Mushollah to make it easier for people to enter without being disturbed by their conversations. So, for this design, two doors make it easy for individuals to walk in even though they are talking (more than 1 person). The clear door also for the building legibility purpose, so its legible from outside to see the inside.

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W. library.uui.ac.id

SURAT KETERANGAN HASIL CEK PLAGIASI

Nomor: 1867216769/Perpus./10/Dir.Perpus/IV/2022

Bismillaahirrahmaanirrahiim

Assalamualaikum Wr. Wb.

Dengan ini, menerangkan Bahwa:

Nama : Imara Dzakia Ariyadi
Nomor Mahasiswa : 17512115
Pembimbing : Yulianto Purwono Prihatmaji S.T., M.T
Fakultas / Prodi : Teknik Sipil dan Perencanaan/ Arsitektur
Judul Karya Ilmiah : Design Islamic Boarding School for the Deaf in Yogyakarta

Karya ilmiah yang bersangkutan di atas telah melalui proses cek plagiasi menggunakan **Turnitin** dengan hasil kemiripan (*similarity*) sebesar **14 (Empat Belas) %**.

Demikian Surat Keterangan ini dibuat untuk dapat dipergunakan sebagaimana mestinya.

Wassalamualaikum Wr. Wb.

Yogyakarta, 7/6/2022

Direktur



Joko S. Prianto, SIP., M.Hum



FINAL ARCHITECTURE DESIGN STUDIO
DESIGN OF ISLAMIC BOARDING SCHOOL
FOR THE DEAF STUDENT IN YOGYAKARTA
Imam Dzakka Arsyad | 17512115
Supervisor : Dr. Yulianti R.A.S.T., M.T., M.P.M.

BT BUILDING
PERFORMANCE &
TECHNOLOGY
LABORATORY

DESIGN OF ISLAMIC BOARDING SCHOOL FOR THE DEAF STUDENT IN YOGYAKARTA

WITH VISUAL ASPECT



No more view blocking



Boundaries between
street and school



Sterilized Classroom
Lighting



Color and Visual
Psychologist



Visual Safety Barrier



Classroom for the Deaf
Student



Deafnet Meena is a Deaf Islamic Boarding School foundation in Yogyakarta. This aims to help deaf children get their rights to develop physically, mentally as well as secular and heavenly knowledge. To achieve this, architects try to design schools according to *Indonesian standards* and use a visual approach as the main framework. This idea of school concept is proposed by this first design.

This project located at Payan as subdistrict of West Gunungsari Regency. The Subdistrict of Payan is surrounded by the administrative areas of Pekus and Gempang subdistricts on the north side, then Wonorejo Subdistrict on the east side. Meanwhile, the southern region is bordered by Palyan and Panggung Subdistrict. The western region is bordered by Bantur Regency. The site total area was 16 ha, an area of 6000m² with the form of the entrance are bordered by a concrete house. The site soil is a-cv-ice field which has a moist structure that must be dried before the building is erected. It

10 meter	10%	60%+1.5	16 meter
----------	-----	---------	----------

For a complete understanding of the research, please refer to the full report, which is available for free download at <http://www.oxfordjournals.org/doi/full/10.1093/oxfordjournals/oxfam.a014001>.

These facts, and those summarized in the accompanying photographs, document the fact that the use of a water bath as a means of heating is not a safe practice.

the present study, the results suggest that the use of the *in vitro* model is a promising approach to study the effects of dietary factors on the gut microbiota. The use of this model is particularly useful for studying the effects of dietary factors on the gut microbiota in the context of a controlled environment. The use of this model is particularly useful for studying the effects of dietary factors on the gut microbiota in the context of a controlled environment.

© 2004 Blackwell Publishing Ltd, *Journal of Internal Medicine* 255: 105–112



1. Wohnraum (Wohnung)
 2. Wohnraum (Wohnung)
 3. Wohnraum (Wohnung)
 4. Wohnraum (Wohnung)
 5. Wohnraum (Wohnung)
 6. Wohnraum (Wohnung)
 7. Wohnraum (Wohnung)
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 16. Wohnraum (Wohnung)
 17. Wohnraum (Wohnung)
 18. Wohnraum (Wohnung)
 19. Wohnraum (Wohnung)

1. 1. Stockwerk
 2. 2. Stockwerk
 3. 3. Stockwerk
 4. 4. Stockwerk
 5. 5. Stockwerk
 6. 6. Stockwerk
 7. 7. Stockwerk
 8. 8. Stockwerk
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 14. 14. Stockwerk
 15. 15. Stockwerk
 16. 16. Stockwerk
 17. 17. Stockwerk
 18. 18. Stockwerk
 19. 19. Stockwerk

[illegible]

1. Revolving doors are used in buildings. They are used to allow people to enter and exit a building without opening the door.

2. A person standing in a doorway.

3. A person standing in a doorway with a glass panel.

4. A solid blue door.

5. A glass door with a wooden frame.

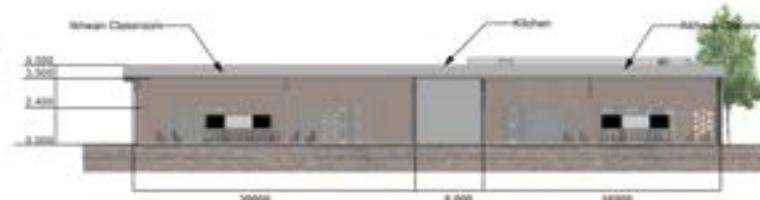
Architectural rendering of the Islamic Boarding School for the Deaf Student in Yogyakarta. The image shows a modern building with a curved wall and circular windows. Two women in hijabs are walking on the left, and a student is sitting on the ground on the right. The rendering includes material samples: Red Brick and Dark Wood Pavement.

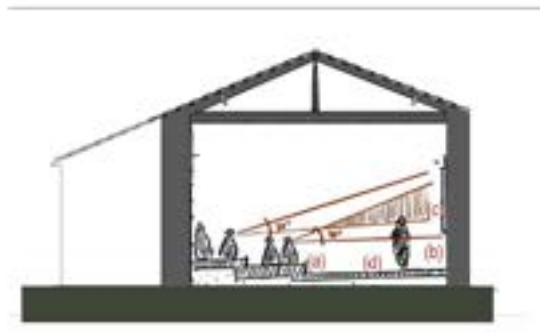


MASS 2 PLAN



HORIZONTAL SECTION

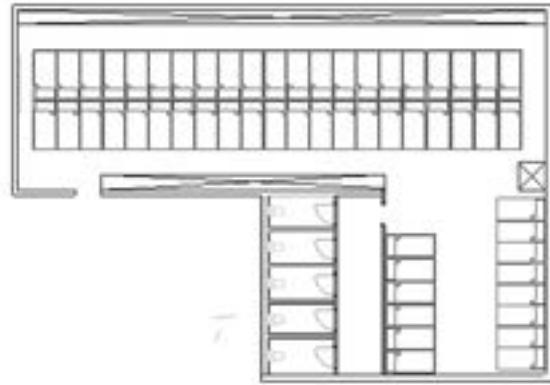




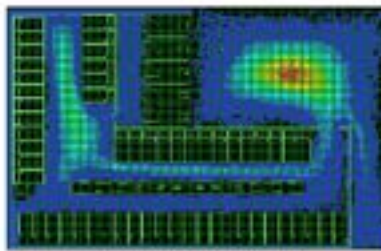


The design of the room space requires that there are no objects obstructing the view. This is in accordance with the statement of the chairman of Dahrul Ahson, namely Mr. Kai Abu (page) that the santri supervisor (foster parents) has the task of supervising the students, including at bedtime. In this case, the architect tried to help by developing a bed layout with the least visual blocking. Two models of bed layouts can be seen in the following picture.

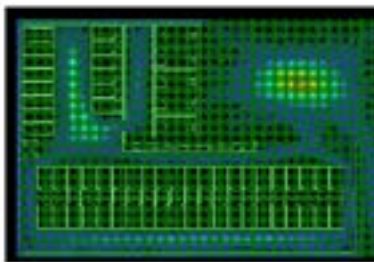
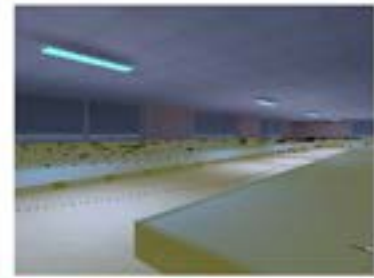
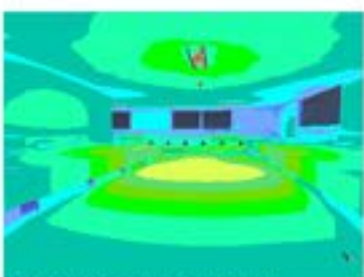
BEDROOM SCHEMATIC PLAN



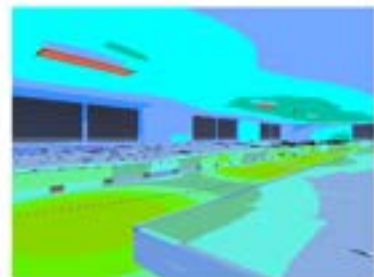
In general design, the bedroom has two functions, as a study room and a bedroom. The picture below is a visualization of the location of the two functions. The study is along the upper space (bed) between the front and back doors. The study room lighting is around 100 lux. As for the bedroom, the bedroom has a study lighting for study in the study room with the lowest value according to the minimum value of 100 lux. In this step, we used Dialux software to find out the best location and specification of the light as well as the design of the lighting in the room so that the lighting is even and clear lighting.



BEDROOM VISIBILITY TEST BY DEPTHMAP



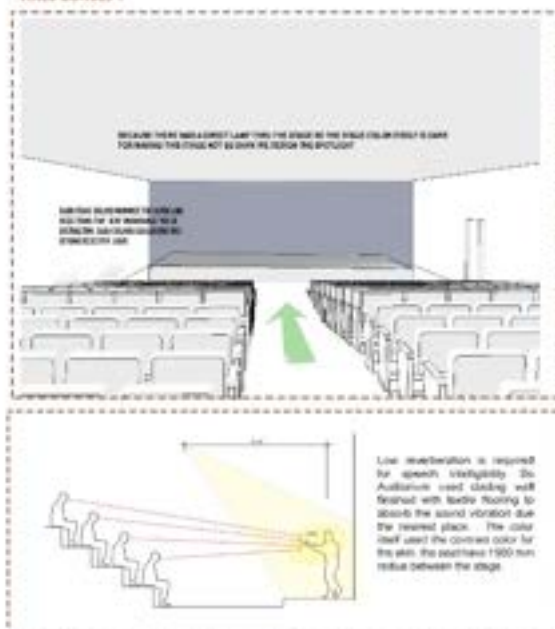
BEDROOM LIGHTING TEST BY DIALUX



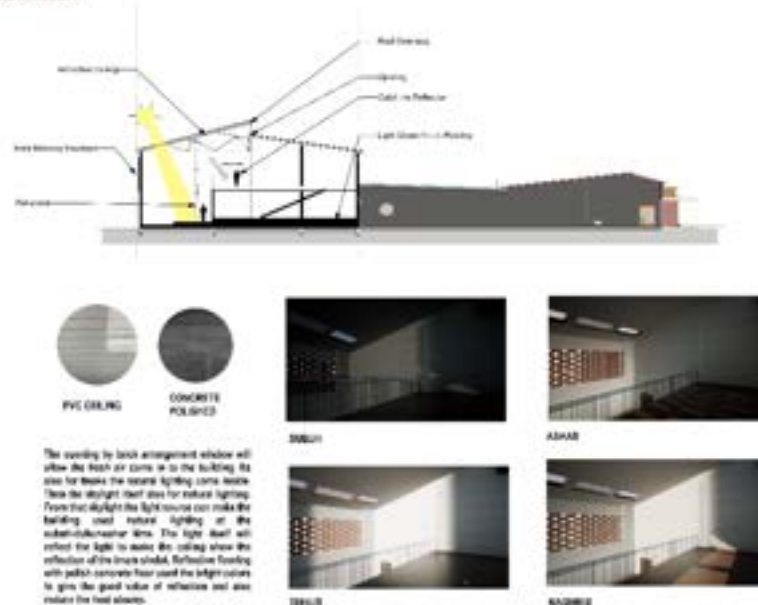
WINDOW FACADE EXTERIOR



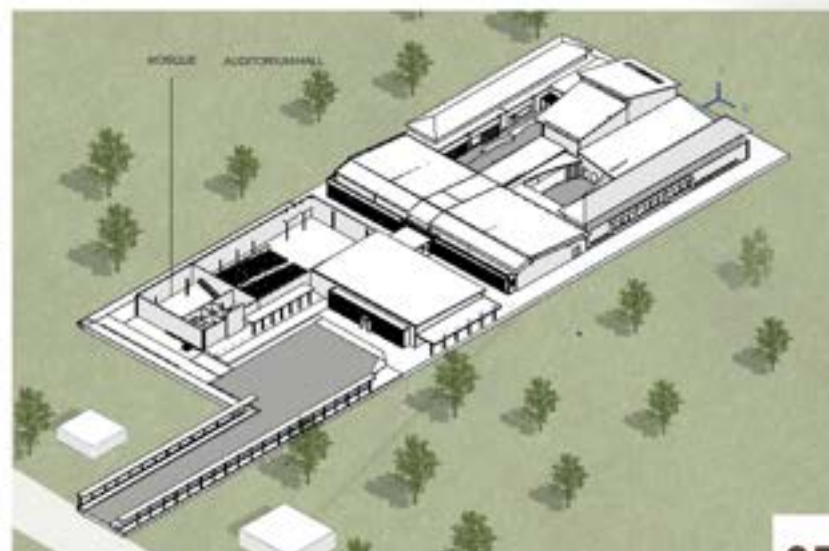
HALL CONCEPT



MOSQUE CONCEPT



RENDER EXTERIOR



**COMPLETE
TECHNICAL DRAWING**

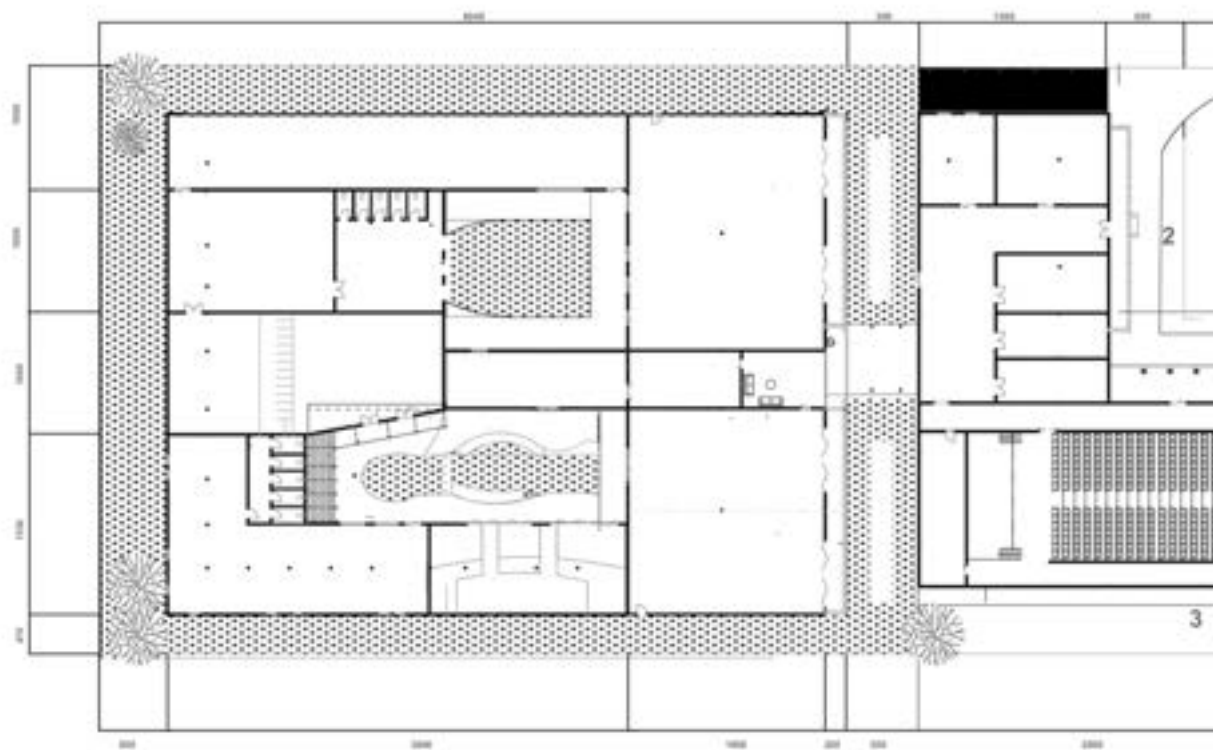


MODEL MAQUETTE

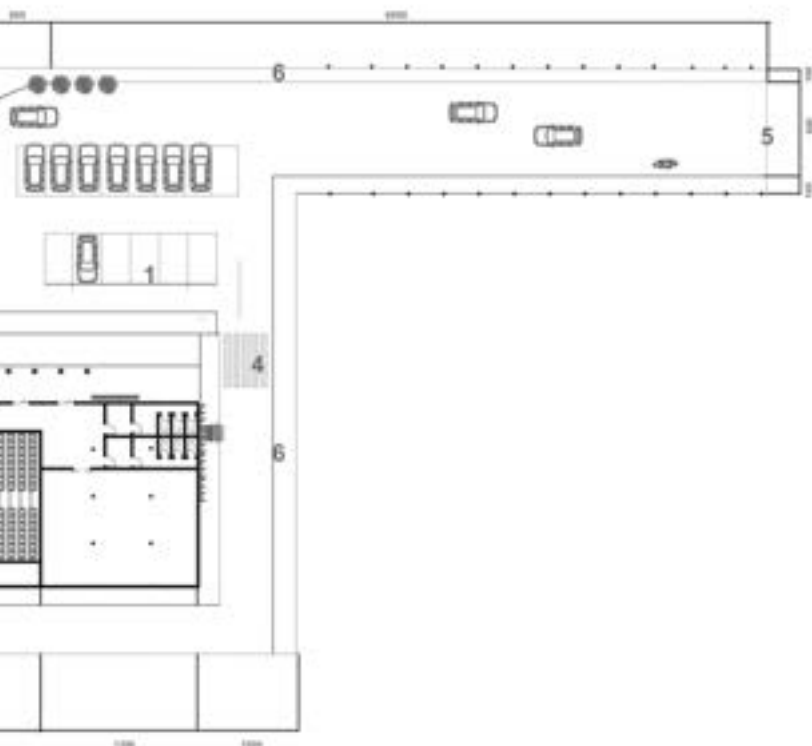


DEAF SCHOOL COMIC





- LEGEND :
- 1. CAR PARKING
 - 2. DROP OFF (SCHOOL ENTRANCE)
 - 3. BIKERS PARKING
 - 4. ZEBRA CROSS
 - 5. ENTRANCE GATE
 - 6. PATHWAY



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WITH VISUAL ASPECT APPROACH

NAME

IMARA DZAKIA ARIYADI
(17512115)

SUPERVISOR

Dr. Yulianto P. Prihatmaji, S.T. ,
M.T. , IAI, IPM.

DRAWING TITLE

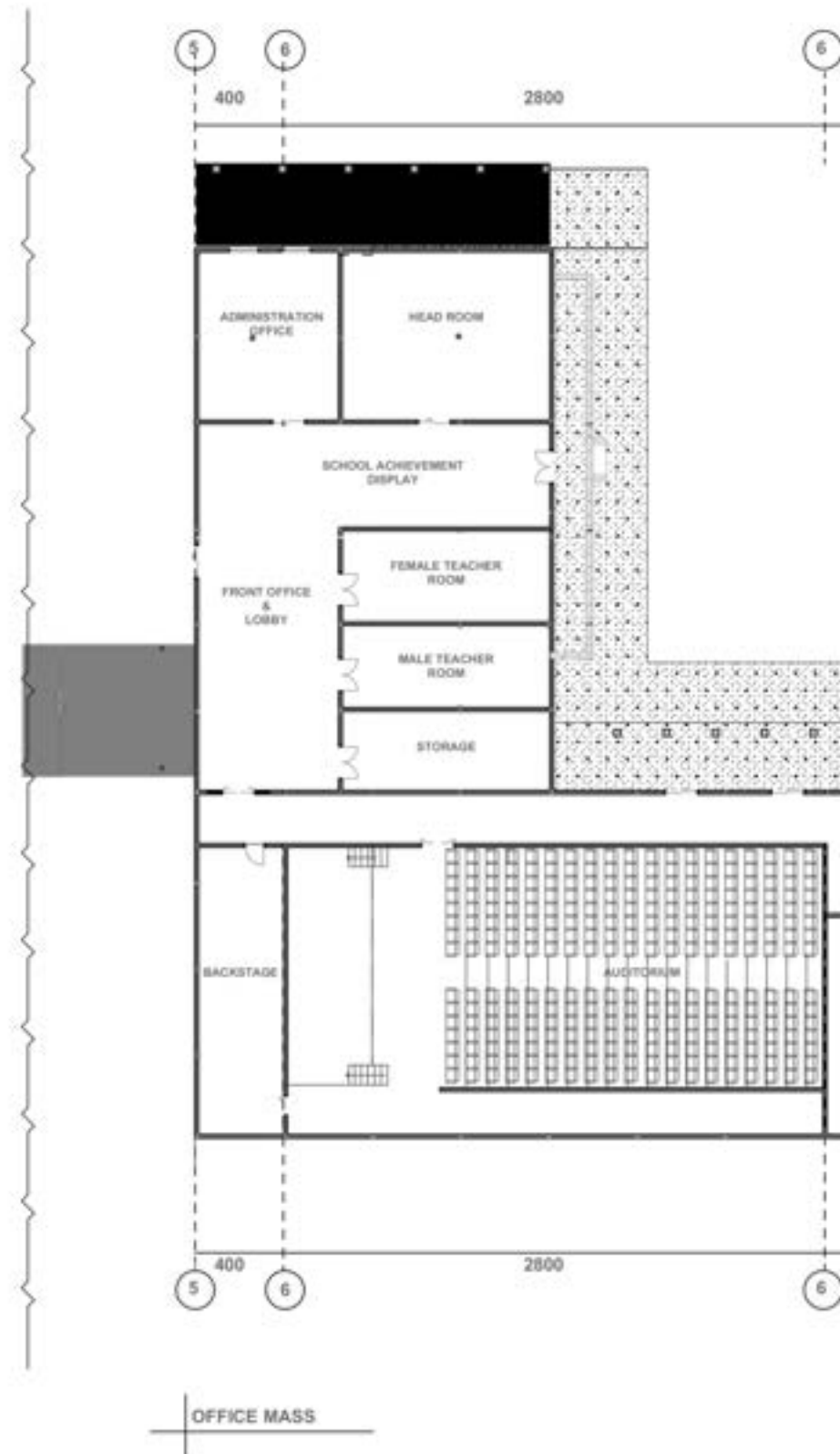
SITEPLAN

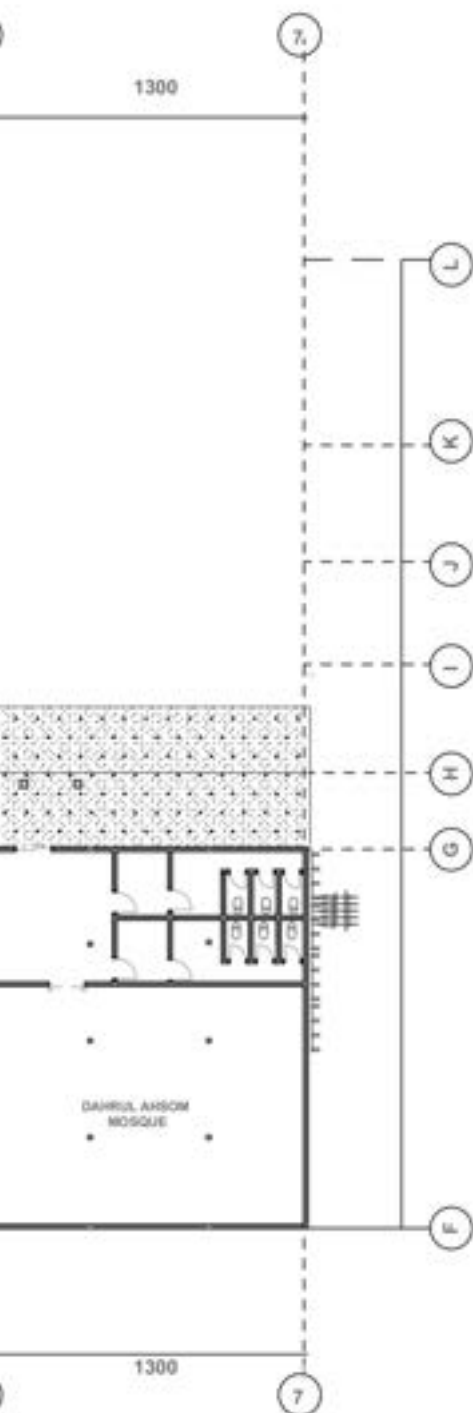
SCALE

1:500



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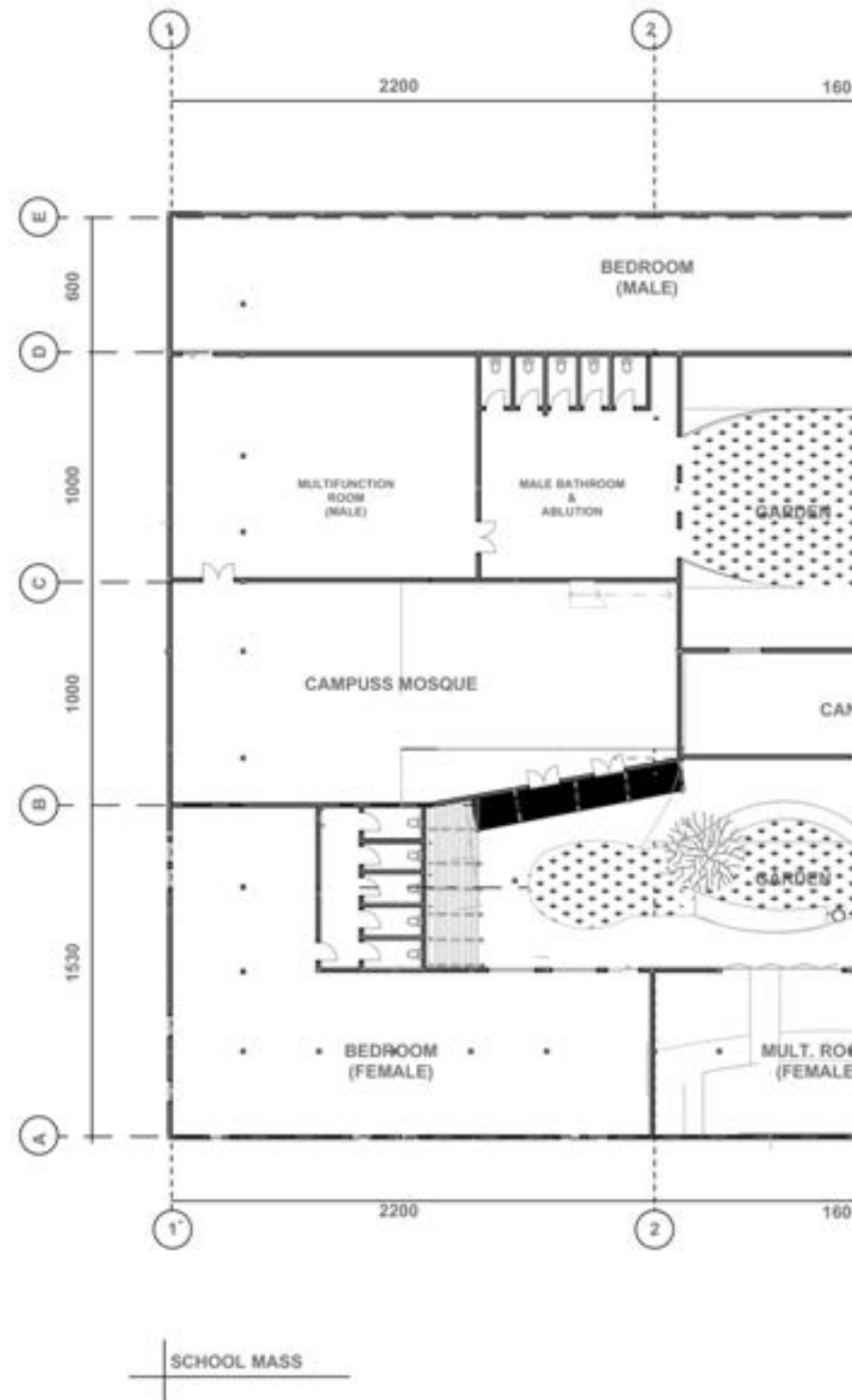
DARUL AHSOM OFFICE
PLAN

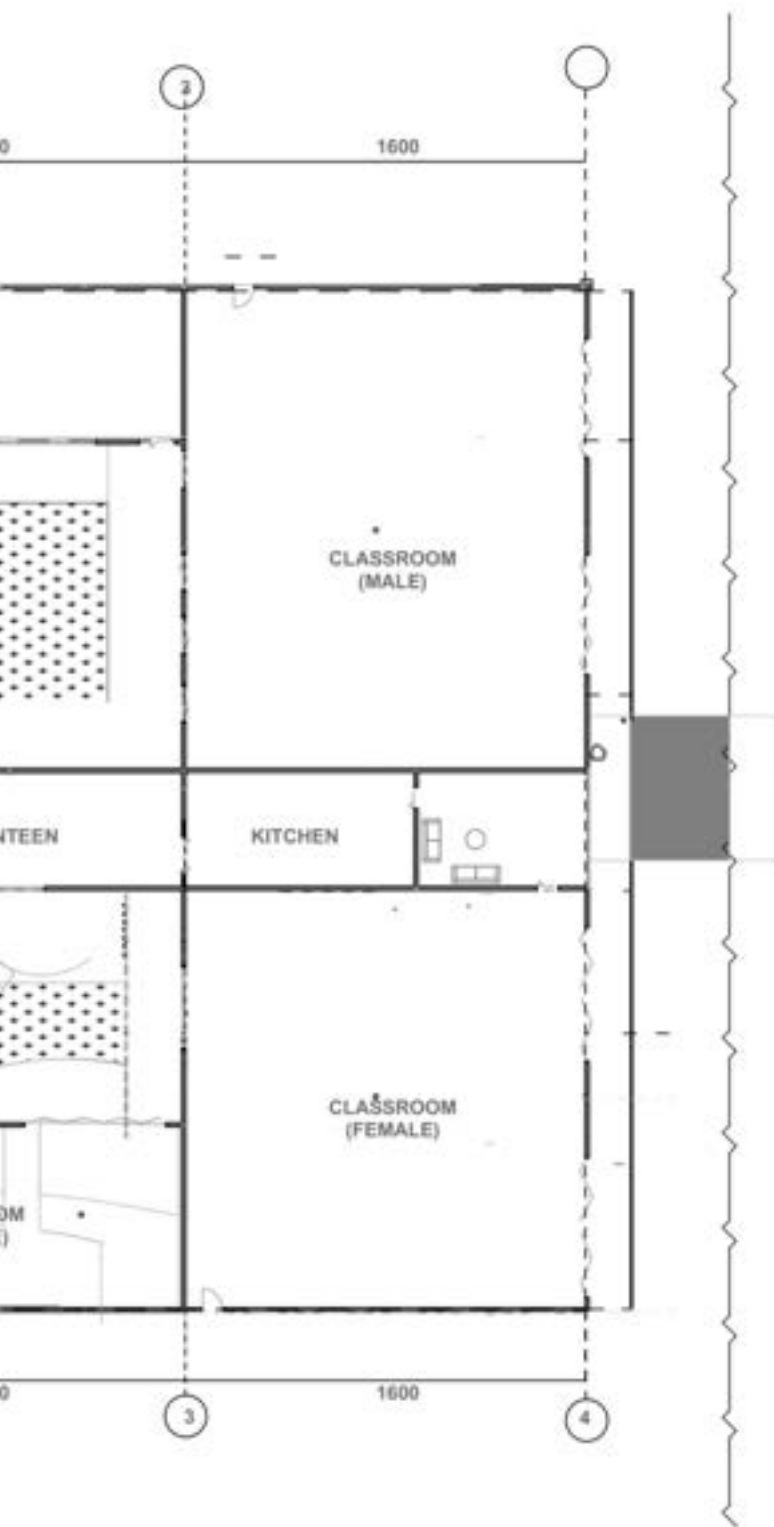
SCALE

1:250



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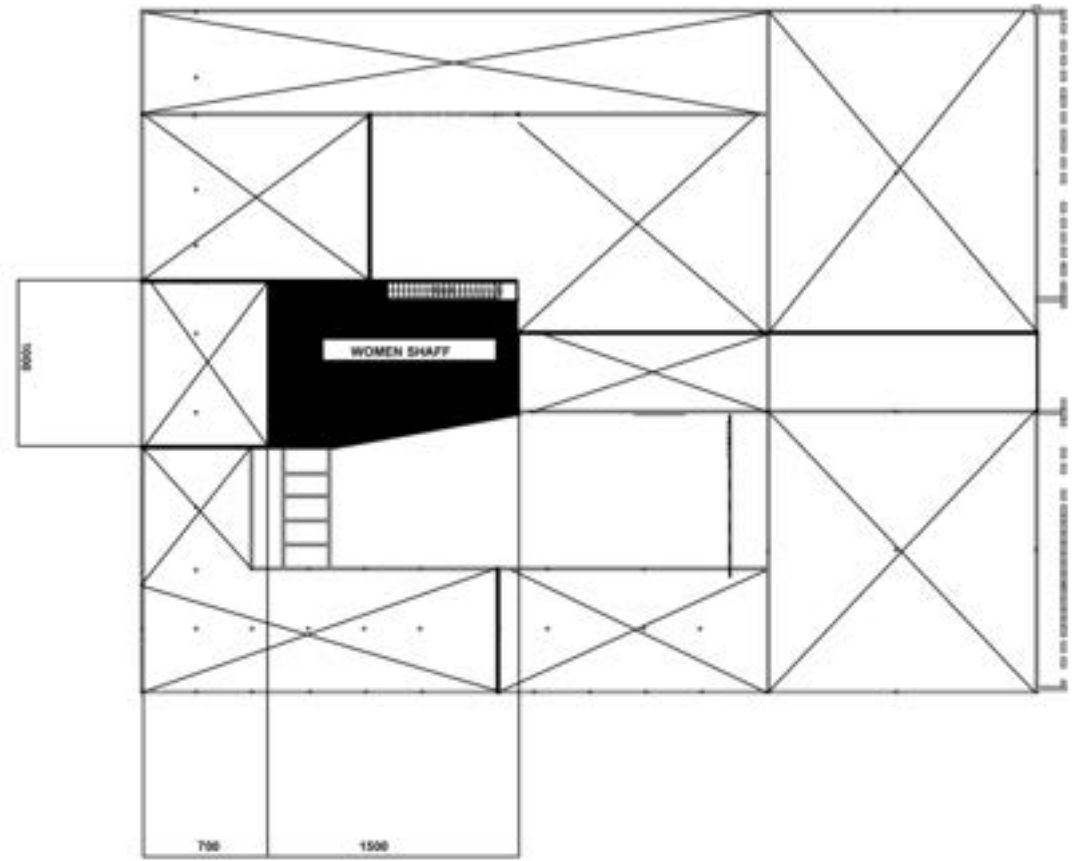
DARUL AHSOM SCHOOL
PLAN

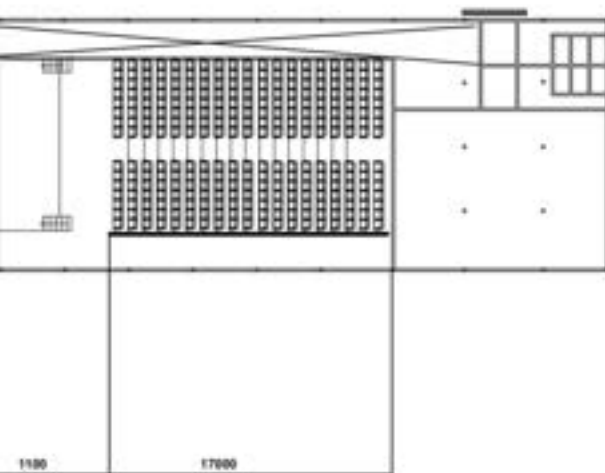
SCALE

1:250



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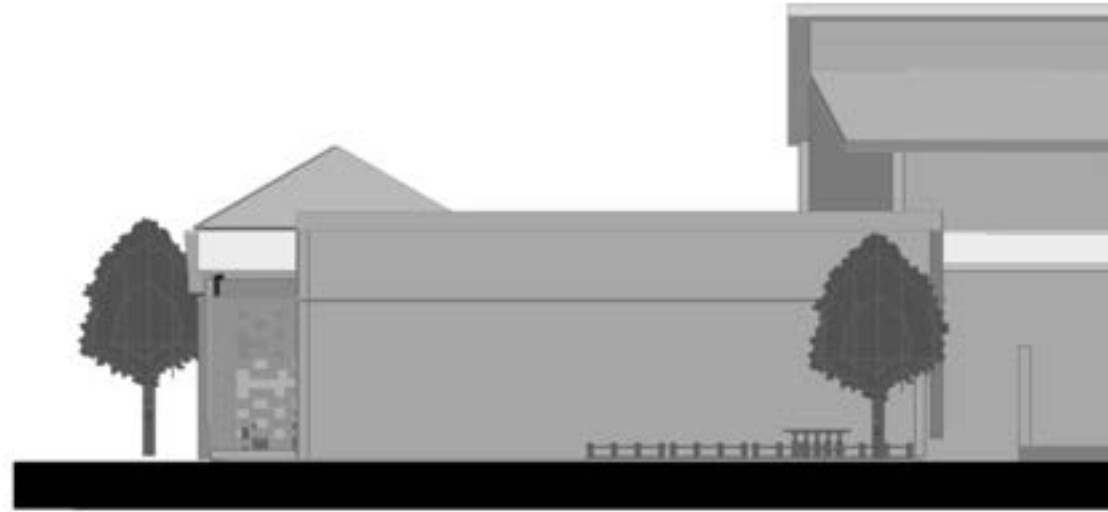
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SECOND FLOORPLAN

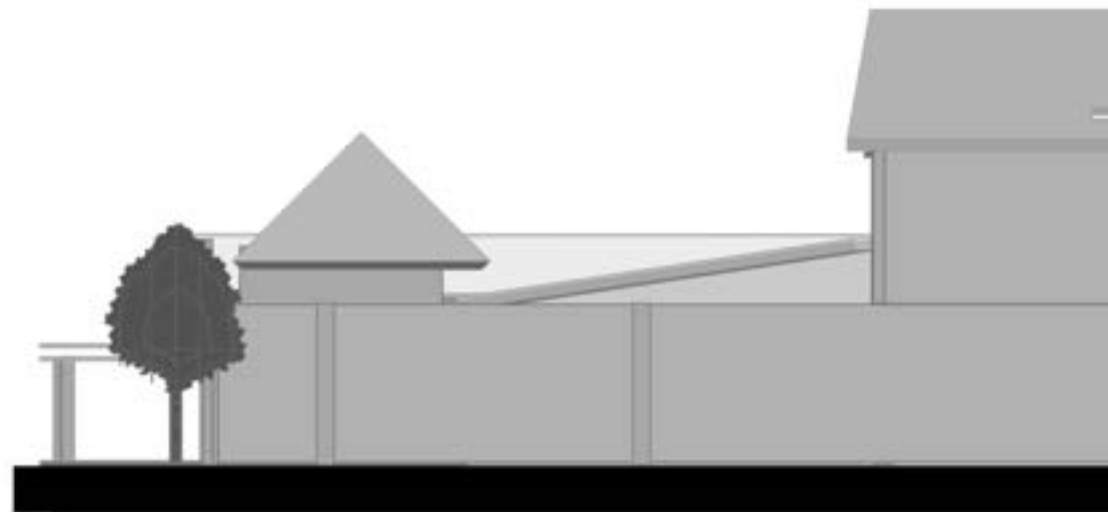
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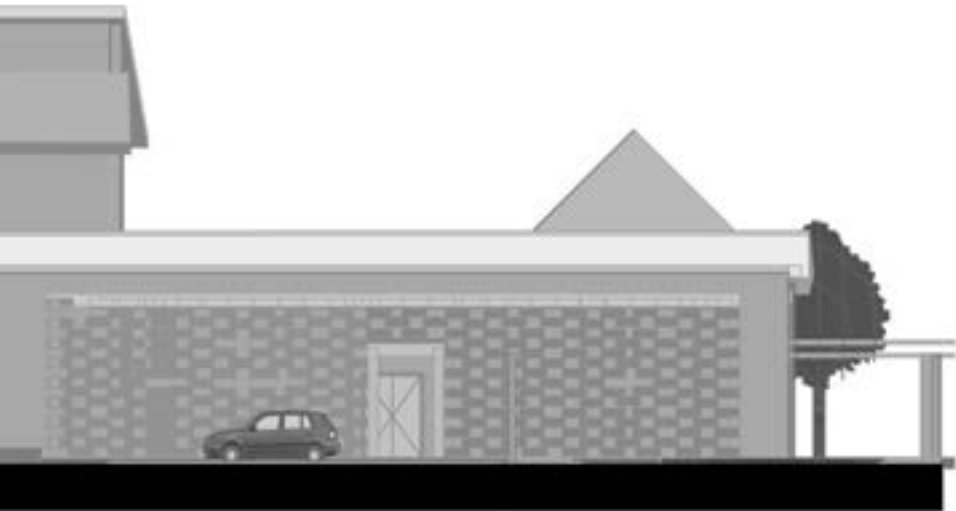
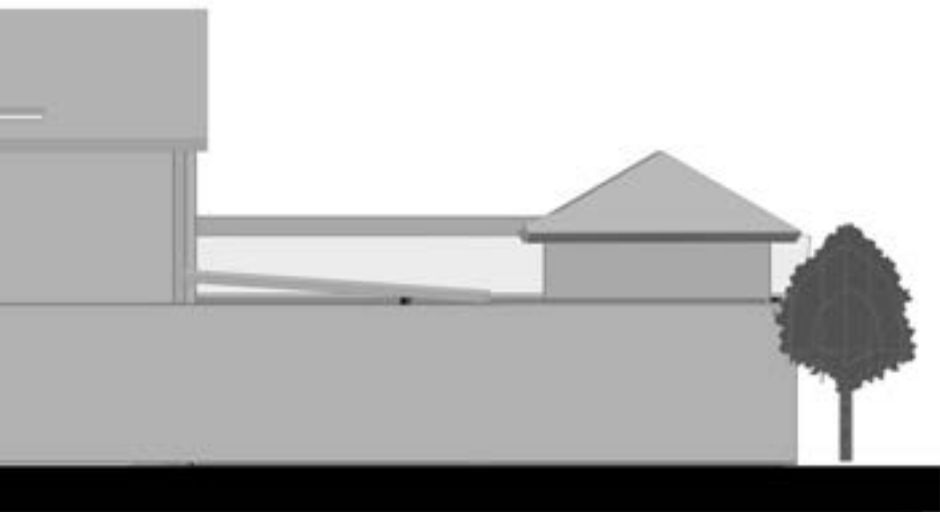




East Elevation



West Elevation



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DRAWING TITLE

NORTH AND SOUTH
ELEVATION

SCALE

1:250

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North Elevation



South Elevation



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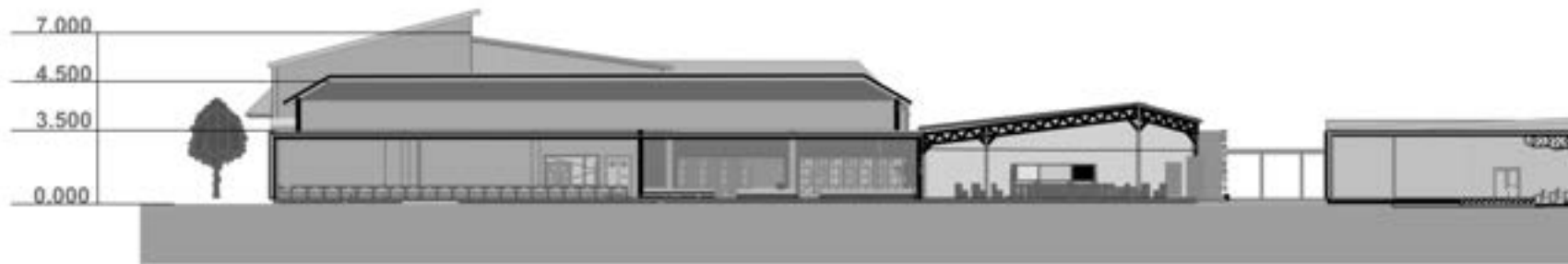
NORTH AND SOUTH
ELEVATION

SCALE

1:400



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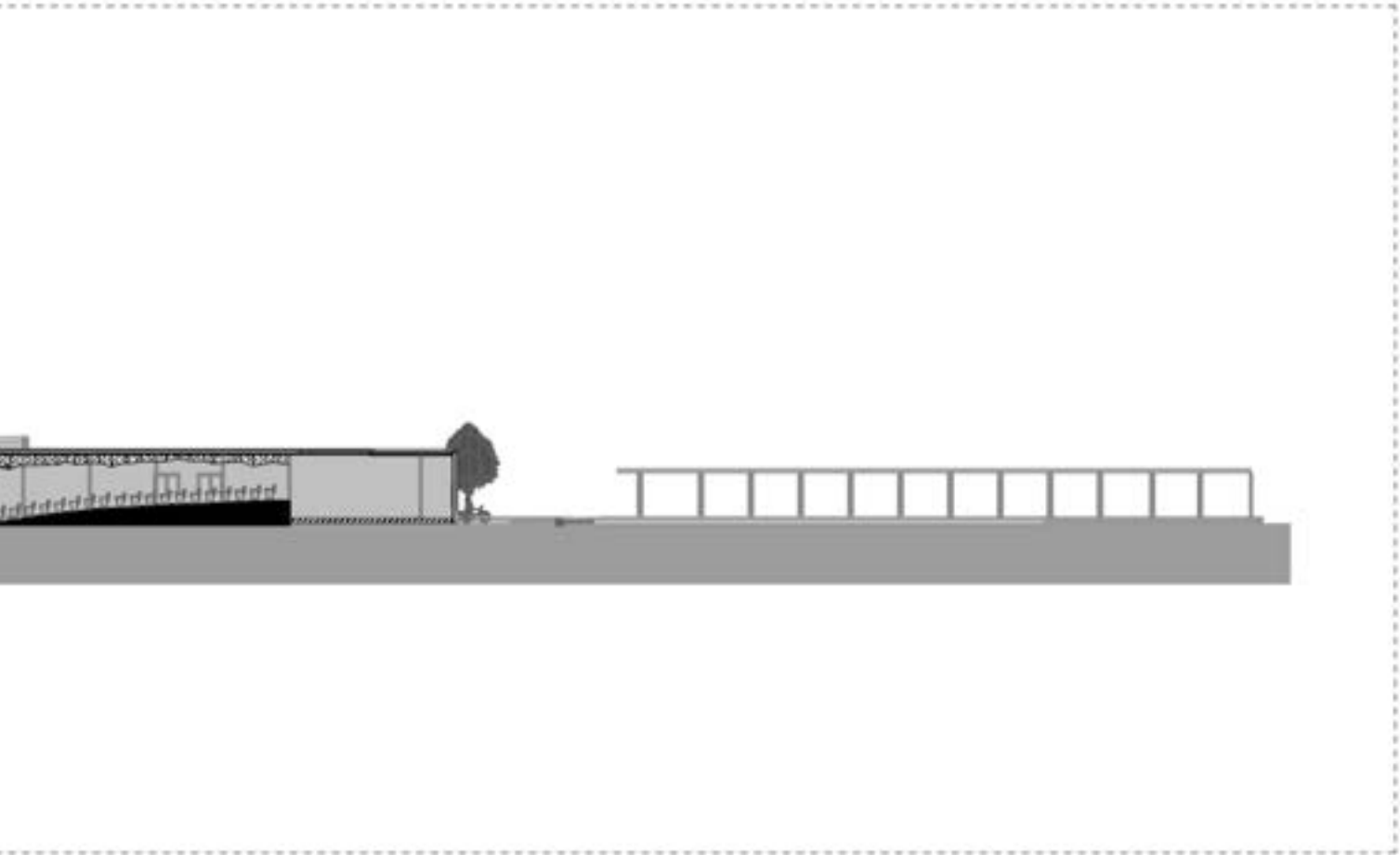
SECTION A-A'

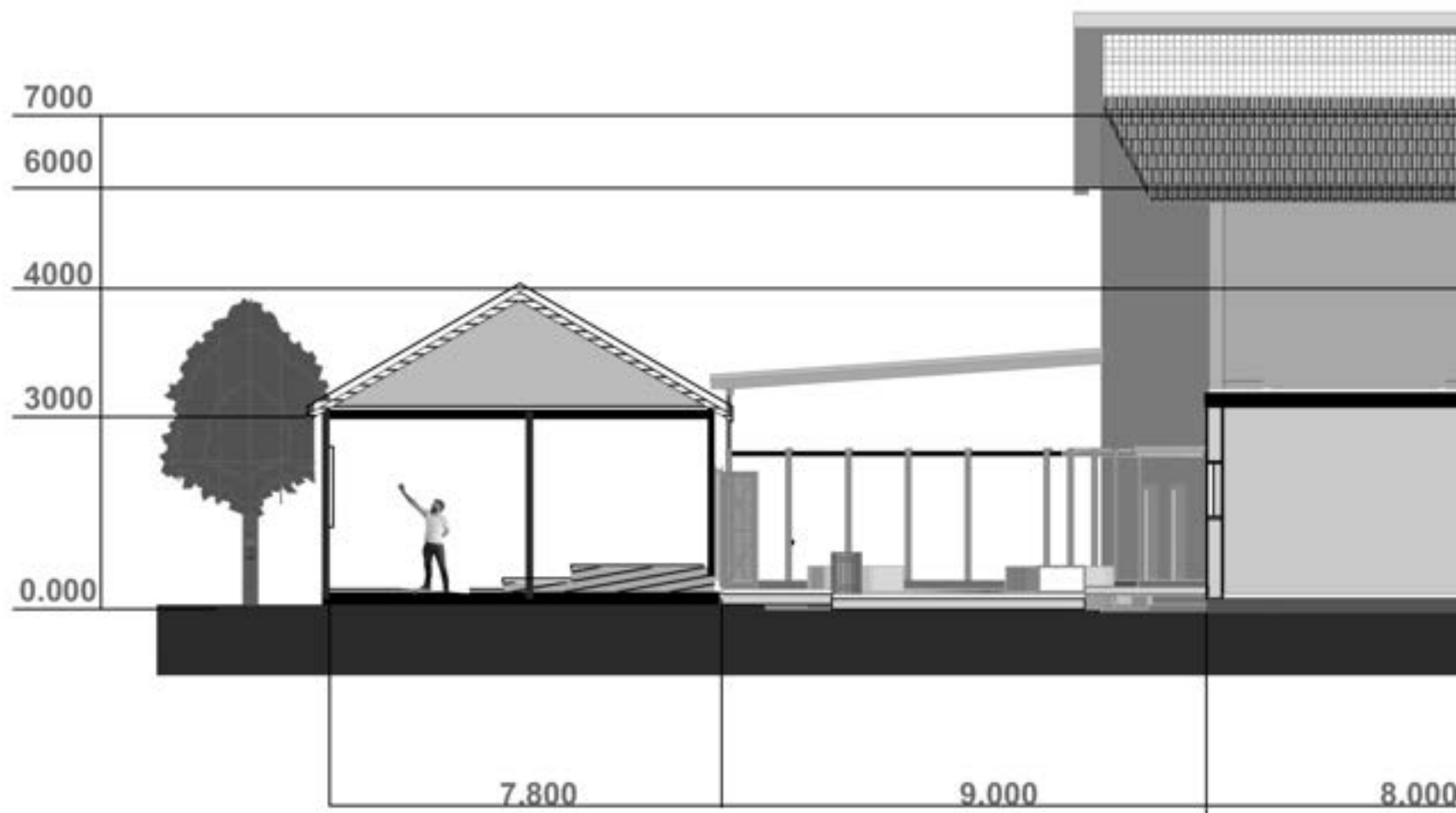
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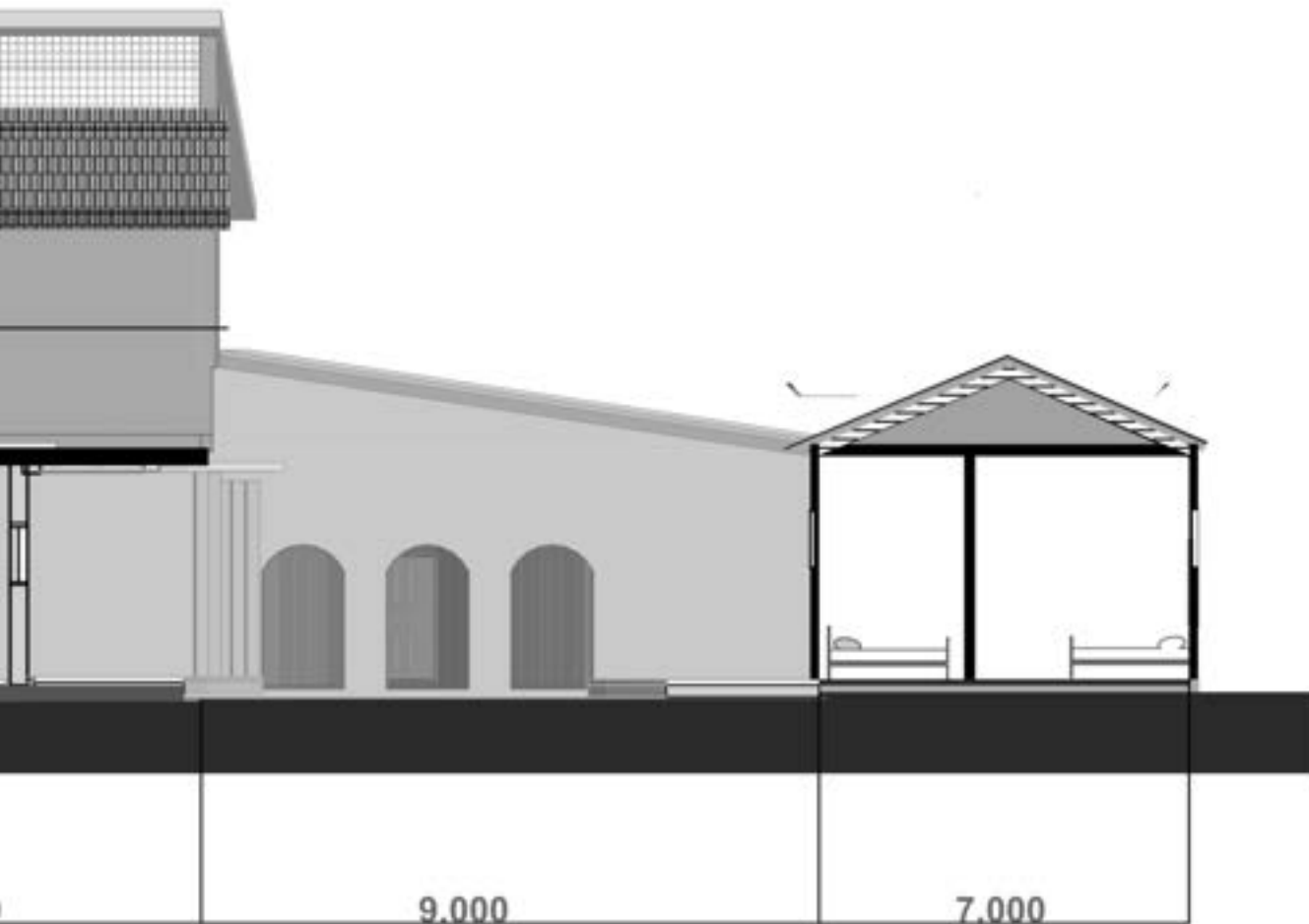
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DRAWING TITLE

SECTION 1-1'

SCALE

1:300



NOTES

“IT’S A VISUAL WORLD
AND PEOPLE RESPOND TO
VISUALS”

Joe Sacco