FINAL PROJECT – RA.141581

COMMUNITY CENTER FOR THE BLIND AND VISUALLY IMPAIRED

RINI ANGELIANTARI
08111440000030

Supervisor :
Ir. Purwanita Setijanti, M.Sc., Ph.D.

Department of Architecture
Faculty of Architecture, Design & Planning
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LEMBAR PENGESAHAN

COMMUNITY CENTER FOR THE BLIND AND VISUALLY IMPAIRED

Disusun oleh :

RINI ANGELIANTARI
NRP : 08111440000030

Telah dipertahankan dan diterima
oleh Tim penguji Tugas Akhir RA.141581
Departemen Arsitektur FADP-ITS pada tanggal 3 Juli 2018
Nilai : AB

Mengetahui

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DECLARATION SHEET

I, the undersigned below:

N a m e : Rini Angeliantari

N R P : 08111440000030

Final Project Title : Community Center for the Blind and Visually Impaired

Period : Odd/Even Semestre Year 2017 / 2018

Hereby declare that the Final Project that I make is my own work and really done by myself (original / original), not a result of tracing from other people's work. If I do a plagiarism on the work of another student / student, then I am willing to accept the academic sanction that will be imposed by the parties of Architecture Depatment FADP ITS

Thus I make this Statement with full awareness and will be used as a requirement to complete Final Project RA. 141581

Surabaya, 3 July 2018

Declared by

Rini Angeliantari

NRP. 08111440000030

ABSTRACT

COMMUNITY CENTER FOR THE BLIND AND VISUALLY IMPAIRED

By

Name : Rini Angeliantari

Student ID : 08111440000030

Most people with blindness and visual impairment experience discrimination in everyday life, in aspects like social, economy, and even in architecture. One of the way to tackle this problem is to provide them with an environment which does not handicap them even further : an accessible environment where they can move in independence.

Starting from the notion that states the real fear of the people with blindness and visual impairment is not to not being able to see, but to be feeling completely lost in darkness, the design is trying to tackle the problem by providing easy navigation and orientation for the people with blindness and visual impairment. Using narrative method, the design will focus on multisensory experience to provide different architecural quality on each space, creating different impression for people with blindness and visual impairment to ease their navigation in the building.

The aim of the design is to create an architecture which not can only be accessible for the poeple with blindness and visual impairment, but also raising their indpendence, confidence, and dignity.

Keywords: architecture, atmosheric quality, blindness, independence, multisensory design, navigation, orientation, visual impairment

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CHAPTER 1
INTRODUCTION

1.1 Background

The number of people with disabilities in Indonesia is estimated to reach 12.15% of the population. Below is the data taken from *Situasi Penyandang Disabilitas* (2014) by the Indonesian Ministry of Healthcare. Disabled community is one of the minorities group that have not received the same opportunity as the 'normal' group of people, especially in education and job opportunity. This can be seen from the large number of people with disability who don't participate in the education sector. 838.343 people do not complete or receive their elementary school. The number declines steeply as the education level rises. The low amount of participation also happens in the jobs sector. 1.038.579 people do no work or have a job. This is a huge difference to compare to the level of people with disability who have jobs.

As quoted from *Situasi Penyandang Disabilitas* from *Departemen Kesehatan*, it is said that the problem relating to the limited access to education for the disabled people resulting in the difficulty for the disabled people to attain a job in society. Even if a person with disability gets a job, the salary is often not as high as the person without disability because most of the job they get is the labour or physical job. This problem results in the poverty to the disabled community. Unfortunately, this also happens in paradox. The poverty can also cause disability. A person who is in great poverty must have to delay certain medical treatment with the consequence of getting the problem worse and even having permanent disability. This chart below shows the number of people who suffers poverty based on the disability they have.

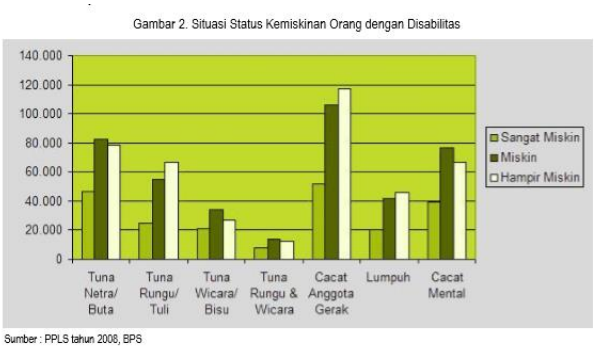


Figure 1.1 *Situasi Status Kemiskinan Orang dengan Disabilitas* (Poverty Status of People with Disabilities)

According to English Oxford Dictionary, the word "disabled" means "(of a person) having a physical or mental condition that limits movements, senses, or activities". This may include all people with any kind of impairment, whether temporary or permanent, although the ones with the permanent impairment is more often to be referred as "disabled-person". The problem faced by the disabled community in other to merge with society is the barrier that the society creates. This does not only refer to *visible barrier* and *invisible barrier*. *Visible barrier* refers to medical and physical discourse, the limit of physical mobility and ability. *Invisible barrier* refers to *social discourse* and *cultural discourse,* the stigma perceived by the society. These barriers are interrelated and both are responsible in creating the stigma for the disabled community. *Visible barrier* is the representation of the *invisible barrier* the society creates for the disabled community. These barriers rooted from the "social perception" of the society toward the disabled community. Social perception is *how people form the impression and inference about other people*. Social perception can create "social bias". Social bias is the prejudice or favor toward certain social group or people. Social bias can happen in the terms of toward certain group or within the interaction. Social bias toward certain group is divided into three categories: status-quo bias, ingroup bias, and stereotyping. However, in this paper, we only dwell deeper in the

stereotyping process. Social bias within the interaction also divided into groups, but in this paper, we will only discuss about the 'halo-effect'. Stereotyping is the process of placing certain attributes to a group of people according to certain traits they have. Halo-effect is "..human tendency in impression formation to assume that once a person possesses some positive or negative characteristic, other as yet unknown qualities will also be positive or negative, in other words, consistent with the existing impression". These two phenomenon have been a backlash to the person with disability. These two phenomenon are affected by the person's expectation, emotion, motivation, and culture. For example, when a person sees another person with wheelchair, he would *expect* that that person is weak and incapable of doing anything better than most people, which is not true. However, the phenomenon can be broken by interact the disabled and the non-disabled person so that the non-disabled person can receive the *cue* that cues him into perception that the disabled person is not that helpless – that they can do as much as the non-disabled do, yet in a different way. This is where inclusive design takes the role.

The design will be concerned to people with visual disabilities/ people with blindness. According to Situasi Penyandang Disabilitas (2014) by the Indonesian Ministry of Healthcare, people with blindness are ranked in the second highest in number of disability suffered by Indonesian people (29,63%). According to the survey done by BPS in 2008, people with blindness are also ranked in the second place of the poorest people with disablility. Blindness is also one of the most complex kind of disability. Thus, the design will be focused to people who suffer blindness ,especially children and teenangers and people in their productive age. To tackle the problem within the people with blindness, the design must be faced with some questions :

1. How architecture can help raising independence and self-esteem within the person with blindness?

2. How do we show the people that people with blindness are as capable as everyone else?

Therefore, the designer tries to elaborate the existing problem and transfer them to design problems

Figure 1.2 Diagram relating issue and design issue

1.2 Context and Design Issue

Architecture can play an important role in creating facilities that sustain the dignity of people who have fallen on hard times (Davis, 2004). Accoring to John Hull in his book On sight and Insight:A journey into the World of Blindness, for people with blindness, the real fear is not to not being able to see, but to be feeling completely lost in darkness. In raising the dignity of people with blindness and visual impairment, we must be able to understand the perception through their lenses. In perceiving the world, humans use their senses. According to KBBI, senses are " tools to feel, smell, hear, see, touch, and feel something intuitively". Senses are receptors of informations that are available in the environment. With the received informations, humans create perception and meaning to their environment. Humans have five senses : vision, hearing, smell, touch, and taste. The integration of the data received by these five senses that creates perpception and understanding of space, is called multisensory (Bachelaard in Pallasmaa, 2004).

There are differences occured between perception of people with normal vision and people with blindness and visual impairement. In order

to understand the perception of the people with blindness and visual impairement, I did research about it. The data is gained through literature review, interview with people with blindness, and personal experiment. The literatures that are mainly used here are : *Architecture Without Vision* (Nollen, 2015), *A Phenomenological Study of Spatial Experiences without Sight and Critique of Visual Dominance in Architecture* (Basyazici-Kulac, 2013), *Towards Safe Urban Navigation for Visually Impaired Travelers* (Dias et.al, 2013), *Body, Senses & Architecture* (Chow,2009). The interview is done with teachers and students of YPAB Surabaya : Mr Tutus Setyawan M,pd (Late blind), Mr. Atung Yunarto M,pd (visually impaired), Fifi (congentially blind), Gallen (congentially blind). The personal experiment is done in Royal Plaza on October 17th 2017 at 02.00 PM- 04.00 PM. The place is chosen in consideration of a crowded and large public space that have never been visited before.

a. Sight

- Normal sight

  Sight is the information received by the eyes. There are two types of vision, peripheral vision and focused vision. Peripheral vision is unfocused vision, located in the sides of vision when looking straight ahead. Vision determines the "beauty" of architecture through its color, rythm, pattern, or contrast.

- Visual Impairment

  There are many types of visual impairement : acuity loss, peripheral loss, or central vision loss. These are caused by many kinds of conditions. A person with visual impairment may still relies on his/her vision to navigate in the environment, depending on the severity of the condition. According to Mr Atung, who experienced gradual loss of vision, claimed that contrasting color is very important to people with visual impairment. He claimed that people with

visual impairment can still distinguish contrasting color, especially yellow.

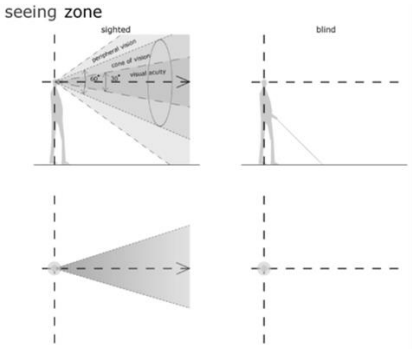


Figure 1.3 Visual Zone

Figure 1.4 Visual impairment view

b. Hearing

- Hearing (normal)

  Hearing is the sense that detects sound before receives information from the vibration in the environment that is communicated through air, water, soil, or things. Unlike vision, hearing is not a focused sense, it is *omi-directional*[(1)]. Sound can generate an intimate atmosphere through the scale of space. Even though space acoustic often gets ignored in a space experienced, in a right placement, sound can create a very spiritual atmosphere.

- Hearing (blind)

  For people with blindness and legal blindness, sound is very helpful in giving information and space navigation. Through binaurial hearing, the source of sound can be predicted. People with blindness can also navigate from the reflection of sound against an object. Sound quality also plays a great role for people with blindness. For example, according to Basyazici-Kulac et.al (2013), noise in a building can create an impression of large place and crowded that it can create a sense of insecurity as if many peole are staring.

Hearing can also help determining whether the space is small or large by the echo by uttering sounds from mouths to perceive the area with the echo.

From the interview I conducted, hearing is also an important sense for navigation. Fifi claimed that she could know whether there is something in front of her through the reflection. Iit is also said that sound can help create a visual imagination in experiencing architecture for people with late-blindness. For example,Mr. Tutus claimed the sound of birds and water can help people with blindness identify his surrounding enviroment.

However, too many sounds can also interfere with the comfort of a space. This claim is supported by my own blind-experiment amidst the crowd of Royal Plaza. When walking, I tried to find any prominent sound that can give me a sense of direction ad mark a certain place, like the sound of hammer near the construction zone or music in a shop. Scale can also play role on sound navigation, the echo would reflect differently in a small corridor and large space.

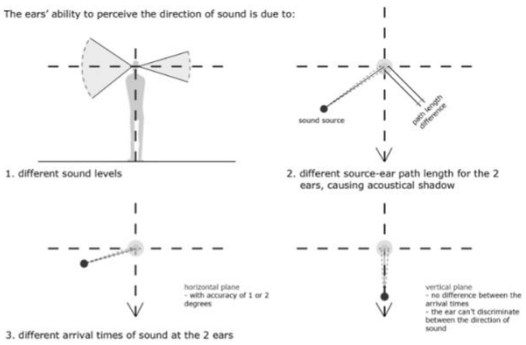


Figure 1.5 Human's hearing

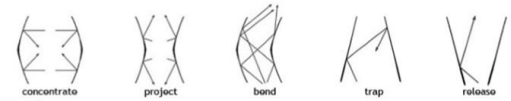


Fig. 27

Figure 1.6 Forms and Sound Waves

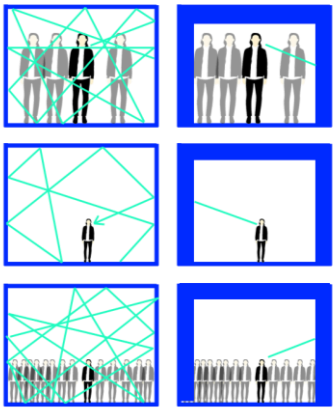


Figure 1.7 Sound reflection regarding to space

c. Smell (Normal)

- Smell (Normal)

  Smell is related strongly to human memory. Certain smell can trigger emotion and memory of a place or situation. This is because of our olfactory receptors have direct connection to amygdala and hippocampus, two parts of the brain that process memory and emotion – which no other senses possess this characteristic.

- Smell (Blind)

  For people with blindness smell is also an important sense to identify with space. Using smell, a person with blindness can acknowledge a certain location. According to the survey conducted by Basyazici-Kulac et.al (2013), smell gives identity to a space, like the smell of a restaurant, a city, or home. Smell can also gives characteristic to space, for example, the dampness of a subway gives a gloomy atmosphere while a pleasant smell can draw people near. The research also shows that people with blindness use smell to remember and identify a certain location more than touch. According to the research conducted by Dias (2013), smell can help to

determine location in the space, like the smell of coffee or the smell of food. The displacement of air whenever someone moves from indoor to outdoor or when someone walks by can also give information of the space.

Another example is that Mr.Tutus claimed that he acknowledged the street where he lived through the smell of vanila from the nearby factory. Aside from that, from the personal experiment I conducted, smell is also the most prominent sense that we can feel amidst the crowd. Smell helps me to identify the shops near me, like the bakery. The smell of the wet cloth used to wipe the tables also told me that I was nearby a fastfood restaurant.

d. Touch (Normal)

- Touch (Normal)

  A philosopher, George Berkeley, associates vision with touch. He believes that it was imposible for vision to comprehend material, distance, and depth without the help of touch. Touch helps vision to understand solidity, protrusion, texture, weight, density, and temperature of something.

- Touch (Blind)

  For people with blindness, touch is the "second eyes" for navigation and identification of place. As stated in *Body, Senses, and Architecture* (Chow, 2009), a person with blindness will not be confused on going somewhere as long as he can lead himself with his hands. Space for people with blindness is not an emptiness between object or something that connects or gives an object a place. Space is something filled with sounds, wind, heat, coldness from the surrounding object. For example, according to Pereira, a space is not an

empty space that is invisible between two objects, it is a boundary given by difference of temperature. If he placed his hand under the sunlight, he could go to the direction of the window. He didn't know where exactly the window, but he could follow the sunlight with its temperature.

Aside from that, according to the interview with Mr.Tutus, he needs touch to help him navigate. He claimed that every step that a blind man take is fear, thus he needs to make sure that each step is safe and know where he is heading. The 'touch' could be achieved by providing guiding blocks, braille letters, or handrails. Object outside the reach of the white cane is considered dangerous, such as objects within the head's height. Moreover, touch can also help him to enjoy his stroll, like the blow of the wind, the texture of the grass, or the steepness of the road. However, according to Fifi, mere guiding blocks still could not provide sense of direction. She said that she gets confused when the blocks are divided into two directions, implying the need of other clues for where she is heading. According to Gallen, haptic sensation like the texture of the floor can also help to determine whether he is indoor or outdoor. He said that outdoor paving is usually coarse and uneven like asphalt or paving while indoor is smoother like ceramic tiles.

According to my own personal experiment, touch gives a sense of security, especially in a large place. I stayed close to the wall during my experiment. However, both wall and handrail only provide me sense of security but do not give me any information of where I was. I rely on other senses to know what surrounded me, such as smell and hearing. However, other stimulations from touch can also help in information gathering, such as the difference between

indoor and outdoor can be sensed by the difference of temperature or the texture of the floor.

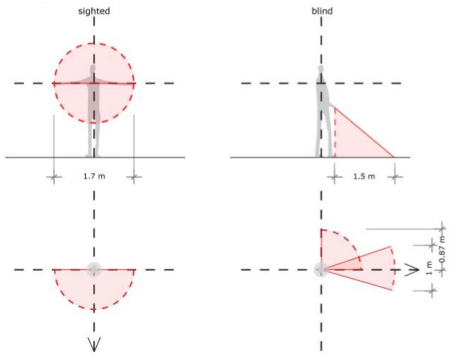


Figure 1.8. Human Touching Zone

e. Gibson's Theory of Perception

In 1966, James J. Gibson proposed an argument that say that perception is not based on having sensations, but on detecting information from the world. This means that people can get the same perceptions despite different sensations. For example, a green tree will still be a green tree even under the twilight light that turn the green tree into red. According to Gibson, our senses respond to the constants of our terrestrial sensations(50) : *rigid forms of the earth, gravity that conditions our upright position and movements*, and *electromagnetic radiations, light*, and *air* (51). Therefore, Gibson classified our perceptual system into *basic orienting, auditory, haptic, taste-smell*, and *visual system*.

TABLE: THE PERCEPTUAL SYSTEMS

Name	Mode of Attention	Receptive Units	Anatomy of the Organ	Activity of the Organ	Stimuli Available	External Information Obtained
The Basic Oriented System	General orientation	Mechano receptors	Vestibular organs	Body equilibrium	Forces of gravity and acceleration	Direction of gravity, being pushed
The Auditory System	Listening	Mechano receptors	Cochlear organs with middle ear and auricle	Orienting to sounds	Vibration in the air	Nature and location of vibratory events
The Haptic System	Touching	Mechano receptors and possibly Thermo receptor	Skin (including attachment and openings) Joint (including ligaments) Muscles (including tendons)	Exploration of many kinds	Deformation of tissues Configuration joints Stretching of muscle fibers	Contact with the earth Mechanical encounters Object shapes Material states Solidity of viscosity
The Taste-Smell System	Smelling	Chemo receptors	Nasal cavity (nose)	Sniffing	Composition of the medium	Nature of volatile sources
	Tasting	Chemo- and mechano receptors	Oral cavity (mouth)	Savoring	Composition of ingested objects	Nutritive and Biological values
The Visual System	Looking	Photo receptors	Ocular mechanism (eyes, with intrinsic and extrinsic eye muscles, as related to the vestibular organs, the head and the whole body)	Accommo-dation Pupillary adjustment Fixation, conver-gence Exploration	The variables of the structure in ambient light	Everything that can be specified by the variables of optical structure (information about objects, animals, motions, event, and place)

Fig. 6 – Table of the perceptual systems. Source: Gibson, James J. (1966), p. 50.

Figure 1.9 The Perceptual System

f. Space perception of people with blindness and visual impairment

According to the interview by Nollen (2015) with Debbie Brown, a congentially blind woman, a designer should not “handicap” the blind and visually impaired even further with tactile warnings or automatic doors. Instead, she encourage to give them with confidence and independence in movement that can be achieved by multisensory design. This statement also supported by the data shown above that people with lindness and visually impaired use all their remaining senses to navigate and orient themselves in the space/ However, people with blindness and visual impairment still need those ‘direct’ element of safety to help them moving around the space safely. It is also implied that people with blindness and visual impairement use the information they get from their senses to associate spaces or memorize the layout of the space, like using certain smell as a mark of a space, predicting the object with sounds, or use the floor to identify space. Multisensory experience from other

elements are still needed to encourage independent movement for the people with blindness nd visually impaired.

1.3 Design Problem and Criteria

In order to give confidence for the people with blindness and visual impairement, the design must be able to encourgae independence in movement for them. According to the data gained from the previous section, it can be seen that people with blindness and visual impairement gain informations from their remaining senses,associate, use, and memorize the gained informations to help them navigate in the area. It can also be seen that multisensory stimulations from the space help them to acknowledge the surrounding and predict what's ahead of them. Even though multisensory experience is needed to ease their navigation, elements that ensure them safety also needed as each step that a blind person takes is fear.

Table 1.1 Design Criteria

No.	**Criteria**
1	The design has to have simple and easily memorable circulation
2	The design should also give subtle element to ease navigation for people with blindness
3	The design has to be safe for the people with blindness to move around

CHAPTER 2
DESIGN PROGRAM

2.1 Space Program Recapitulation

According to the interview conducted with people with blindness, the skills that are taught to them are :

- Craft (handycraft)
- Music (piano, guitar, drum, angklung)
- Drama
- Sport (ping pong)
- Massage

2.1.1 User Activity

a. Visitor Activity

Skill and creativity training

Socialize (study, discuss, chat, meeting friends, meeting with NGO)

Recreation and relaxation

b. Staff activity

Maintining the activity in the building

2.1.3 Space Requirement Analysis

Tabel 2.1 Space Function and Activity

Function	Activity	Space Requirement	Private /Public	User
Desire to be seen as equal	Skill and creativity training	Music studio, drama studio. Art workshop, auditorium, massage room, computer class, ping pong area	Public	User, maintenance

Social perception	Working assignments, discussing, chatting with friends, meeting clients	Library, NGO office, co-working area	Public	User, Maintenance
Social perception	Recreation and relaxation	Massage area, garden	Public	User
Service	Take care of the of activities in the building	Maintenance office,utility room, storage	Service	Maintenance

2.1.4 Space Requirement

According to building ratio regulation, total built area that can be built is 50% or 5.092,5. Green space ration is 30% or 1527,5 m^2.

Table 2.2 Space requirement table

Space	Needs	Area(m2)	Total Unit	Total Area (m2)
Parking	Car	1.5	50	750
	Motorcycle	1.5	60	90
	Disability Parking	1.85	2	3.7
Lobby	• Waiting area	150	1	150
	• Receiptionist	27	1	27
	• Circulation			53.1
Restaurant	• Seat	1.6	100	160
	• Kitchen	50	1	50
	• *Washtafel* = 0.56 x 0.49 = 0.27	0.27	3	0.8
	• Circulation			63.3
Art Workshop	• Craft Studio	30	2	60

	• Storage	30	1	30
	• Circulation			27
Music room	• Music studio = 70 m2	70	3	210
	• Waiting area	50	1	50
	• Circulation			78
Massage class	• 9,3 m2/person 9,3 x 10 people	93	2	186
	• Receiptionist & *welcome area*	100	1	100
	• Changing room	2,25	4	9
	• Male treatment room	20	1	20
	• Female treatment room	20	1	20
	• Circulation			44.7
Life skill Classroom	25 m2	25	2	50
	• Circulation			15
Braille classroom	25 m2	25	2	50
	• Circulation			15
NGO office	25 m2	25	2	50
	• Circulation			15
Gallery	108 m2	108	1	108
	• Circulation			
Computer room	1 computer / 3m2 = 3m2 x 15	45	1	31.5
	• Circulation			13.5
Co working Space	Human capacity = 2 m2 x 200	400	1	400
	Circulation			180
Library	• Book collection	100	1	100
	• Non print collection	18.5	1	18,5
	• *Public Access Cataloge*	3	4	12
	• Study room	55,7	1	55,7
	• Circulation desk	11.6	1	11.6
Auditorium	• Seat	160	1	160

	0,8 m2 / person, 200x 0.8 = 160 m2			
	• Stage = 80 m2,	80	1	80
	• *Backstage* = 400 m2 x 5% = 40 m2	40	1	40
	• Rehearsal room	50	1	50
	• Utility room	12	1	12
	• Circulation			102,6
Drama Studio	• 3 m2/person • 3 x 20 =60	60	2	120
	• Circulation			36
Table tennis	• (1.5+5) x(5+ 2.7) =	50,05	3	50,5
	• Circulation			15,5
Sensory Garden	750	750	1	750
	• Circulation			195
Maintenance office	146 m2	146	1	102,2
	• Circulation			46
Storage	65 m2	65	1	65
Service room	• Mechanical room = 4 m2	4	1	34
	• Generator = 25 m2	25	1	25
	• *Elevator Machine Room* = 4 m2	4	1	4
	• Waste	11	1	11
	• Circulation			
Toilet	• Toilet • Disability toilet = 1.6 x 2.3 = 3. 68 1 x 10 = 10, 10 x 3.68 = 36.8 m2	30	3	90

	• Circulation			27
Praying Room	• 2 m2 x 30	42	2	84
	• Circulation	18		36

Total Site Area = 10.185 m2

Total Building Area = 5127 m2

2.2 Site Description

The site is chosen with the criteria : located nearby inclusive schools or school for people with blindness and visually impaired (YPAB), located nearby schools and universities, easily accessed (not secluded), and can be accessed by public transportation. The site chosen is a site in Jl. Ir Soekaerno Surabaya that is located nearby educational institute and also some inclusive schools. The site is also located nearby Educational School for the Blind Children (YPAB).

Figure 2.1 Site location

2.1.1 Land Use

Figure 2.2 Land use

The land use of surrounding area consists of commercial use, public facility , and housing. The building initensity of the area is :

a. GSB : east 18 m, west 10 m

b. KLB : >100%

c. KDB : 50%

2.1.1 Site Analysis

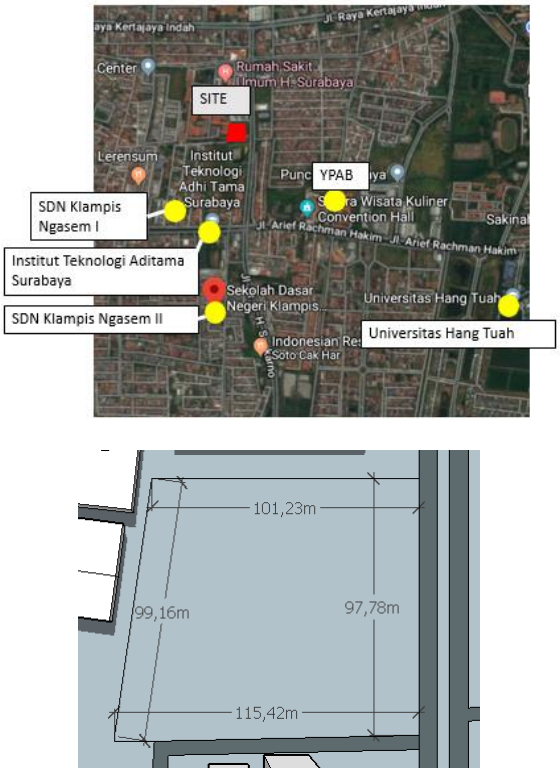


Figure 2.3 Site dimension

The total area of the site is 10.185 m2. The site is located in a prime location, easily accessed by people, both visually or physically. The site is also passed by public transportation. The site is also located near both regular and inclusive schools and institutions apart of the YPAB.

a. Circulation

Figure 2.4 Circulation

The site can be accessed by vehicle from the southern side. There is pedestrian surround the site with ver y good condition on the southern side and far norhern side. The site is also passed by public transportation.

b. Sun Analysis

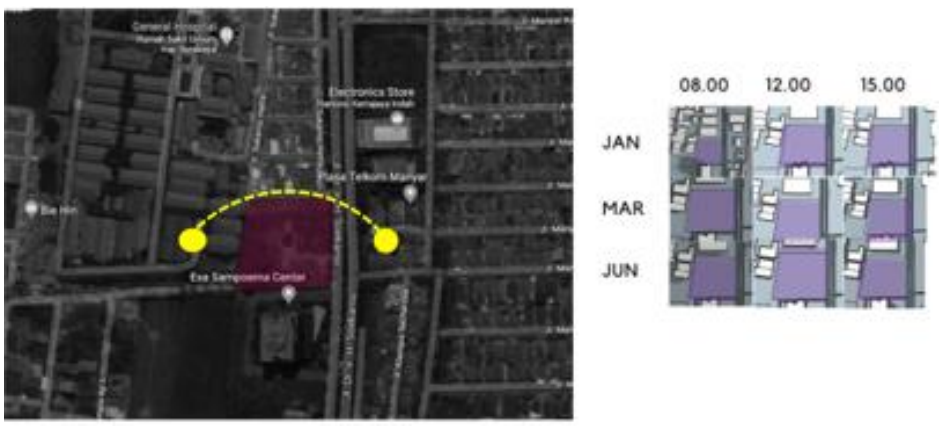


Figure 2.5 Sun analysis

The site does not get any shadow from the surrounding building despite located next to medium – rise buildings (Esa Sampoerna and four-story shops). This enable the site to get full sun light thourough the year.

b. Noise Source

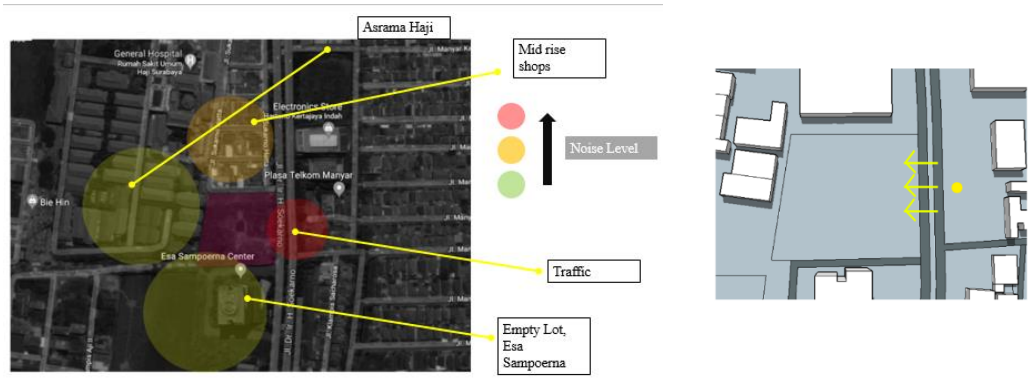


Figure 2.6 Sound analysis

The noise source is from the vehicle passing by in Ir.Soekarno road in the eastern side of the site while the southern and western side of the side are generally calmer.. The road is most busy in the morning (08.00 – 12.00) and in the evening (18.00 – 19.30).

c. View

The site has three views: Ir. Soekarno road with views of palm trees and low rise building in the east, Esa Sampoerna bulidng in the southern side of building, and also shops and One East Apartment in the northern side of the building.

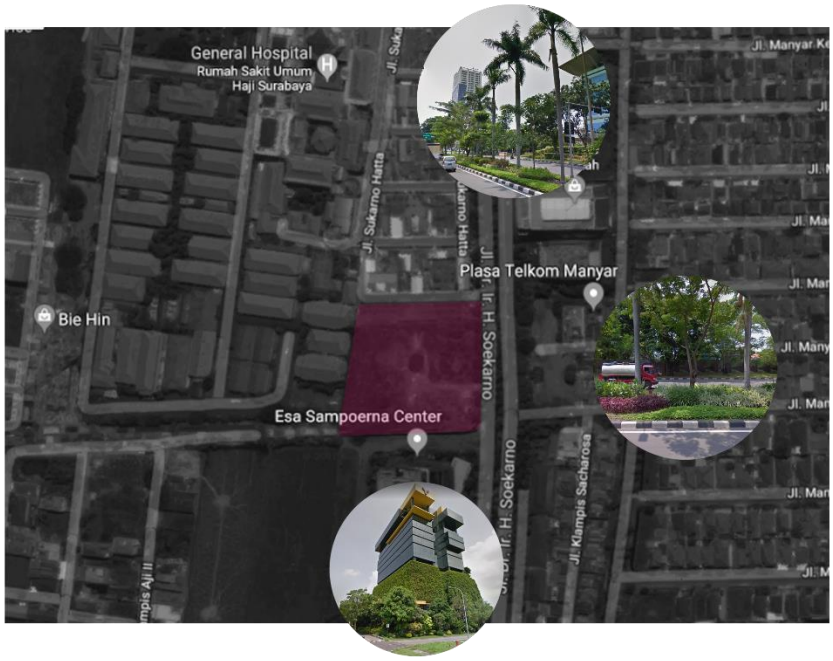


Figure 2.7 Views from the site

d. Wind Analysis

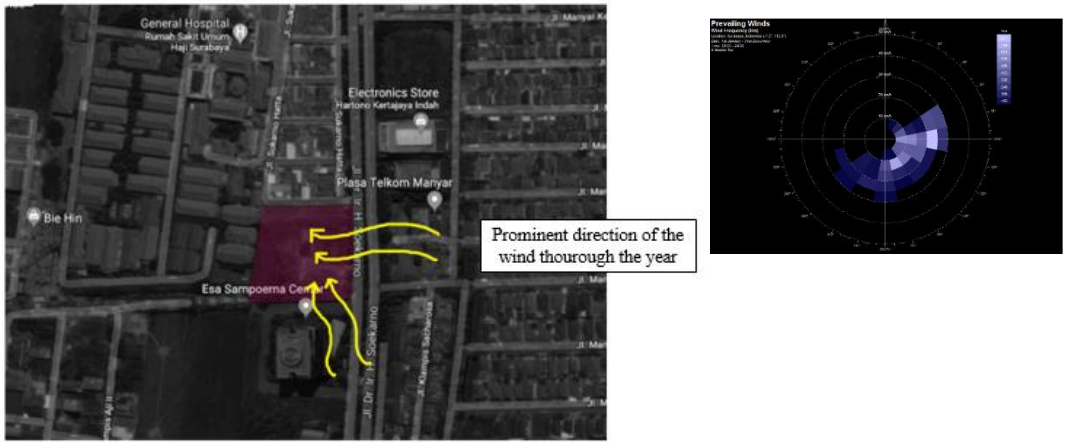


Figure 2.8 Wind Analysis

The site gets prominent wind from the eastern and south eastern side. The location of the site which surrounded by low –medium rise building enables the site to get undisturbed wind, especially from the eastern side.

CHAPTER 3
DESIGN APPROACH AND METHOD

3.1 Design Approach - *Phenomenology*

Phenomenology, according to Maurice Merleau-Ponty, is "..study of essence, including the essence of perception and of consciousness". Phenomenology is "..concerned with providing a direct description of human experience". In phenomenology, human body is the "access point" of perception and consciousness and experience is the act of collaborating perception and consciousness. The body is the starting point of every experience. Phenomenology stresses the contact of the world and human body and how it processes the perceptions through consciousness and make judgment and interpretation about it.

But how is really the spatial perception of the people with blindness? People with blindness have spatial perception in three ways : direct experience, memory, and knowledge. Direct experience is involved in having direct action of sensing with the bodily senses. Memory and knowledge also include the act of experiencing but use different ways afterwards. Both has something to do with "relating with other objects". Merleau-Ponty said in his book, Phenomenology of Perception, "to perceive something in the world always means to relate an object with other objects of the world." Memory is gained through the act of repetance. Knowledge is gained through the act of comparing. All of them has something to do with gaining information. According to Merlau-Ponty, "in an absolutely neutral environment, there are no posibilities of obtaining any kind of information."

In experiencing architecture, a person must make use of their senses. When a person loses his sight, he will be more aware of his surrounding. From the story of John Hull in his book On sight and Insight:A journey into the World of Blindness, He experiences consciousness in the

darkness with no information of shape or colours. For people with blindness, the real fear is not to not being able to see, but to be feeling completely lost in darkness. The feeling could be thrown away by receiving information from his other senses like hearing and touch.

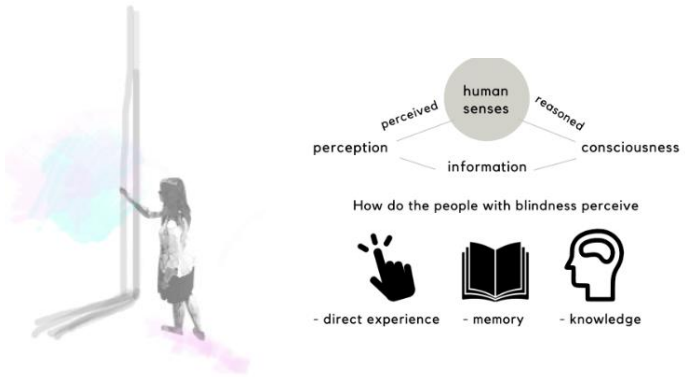


Figure 3.1 Explanation diagram and illustation about perception of space

Architecture is something more than a formation, but also involment of our sensual perceptions. In phenomenology of space, experience is the most important element in perception. Allen Gussow also considered that experience is a factor that can transform a condition into a place . However, our sensual perceptions are often interpreted as visual perceptions only. In his book, Juhani Pallasmaa states that the inequality of the architecture and the city of today is the imbalance between our sensual systems. Hegemony of vision creates the nature of alienation and keeps our sense and mental attachments away. This will unconsciously create discrimination against the blind.

In his book Atmospheres, Peter Zumthor implies that the atmosphere refers to the sensory qualities issued by a space. Atmosphere is a direct physical perception and recognized by emotional sensibilities. The Genius Loci, or "the soul of a place" is closely linked by Juhani Pallasmaa to atmosphere, which gives a unique identity and perception character. According to Zumthor, in creating the atmosphere, there

are aspects that can be considered aside from the visual aspect. These aspects include material compability, sound of a space, temperature of a space, light on things, and intimacy level (level of intimacy (level of intimacy) of intimacy). Here are some of the elements that create atmosphere according to Peter Zumthor:

- **Material compability**

  Different materials are combined to produce a certain atmospheric quality

- **Sound of a space**

  Elements and activities, gathering sounds, reflecting, and absorbing sounds to get a certain atmospheric character.

- **Temperature of a space**

  Each space has its own temperature depending on the material it possesses which then produces a different atmospheric character (eg cold impressive iron because it absorbs the surrounding heat).

- **Level of intimacy (level of intimacy)**

  How shape, scale, size, and dimension compared with humans can create a certain impression.

- **Composure and Seduction**

  How space elements seduct rather than guide us to a space

This approach is important because it emphasizes the contact between the body as a whole and the world, not only in visual aspect. Using phenomenological approach, the design tries to communicate itself through its atmospheric quality to the people with blindness and visual impairment to help them navigate in the building. However, the approach is rather subjective to the beholder because each person can have different perception. Aside from that, there will be too many things to consider if the designer wants to coin specific atmospheric quality in every part of the building. This can be tackled by emphasizing the prominent quality of particular space that can also act as meeting point to the user of the building.

3.2 Design Method

Narrative is derived from Latin word *narratio,* which means “story”. A narrative always concerns a narrator and a listener. The story is the ‘what’ and

narratives are the ‘how’ and ‘what’ combined. Just like architecture, the narrator would be the designer and the listener would be the user – and even the designer himself. The narrative itself would be the architecture. Narrative design method has three roles for the design : linking, structuring, and framing.

In the context of people with blindness and visual impairment, narrative can help to link the designer to their perspective of space perception. The insight of their perception is gained through interview, literature review, and personal experience.

In the context of people with blindness and visual impairement, the role of structure in the narrative can help the designer to arrange and organize the space and activities needed

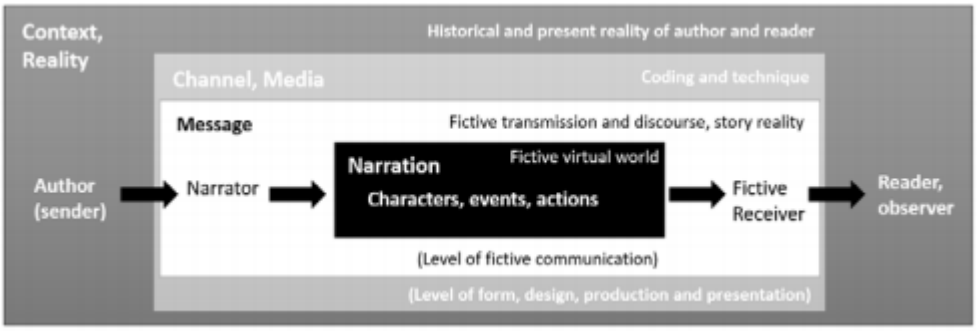


Figure 3.2. A model for narrative communication

In the context for people with blindness and visual impairement, the role of framing helps the narrator to explain, emphasize, and articulate elements that contains information about what the building must or want to convey.

The method is important to help the designer to elaborate the atmospheric quality that needs to be put in each space. The method helps the designer to imagine how it is like to be the protagonist of the building (the user) by narrating the sequence of the building from the entrance to the spaces in the building.

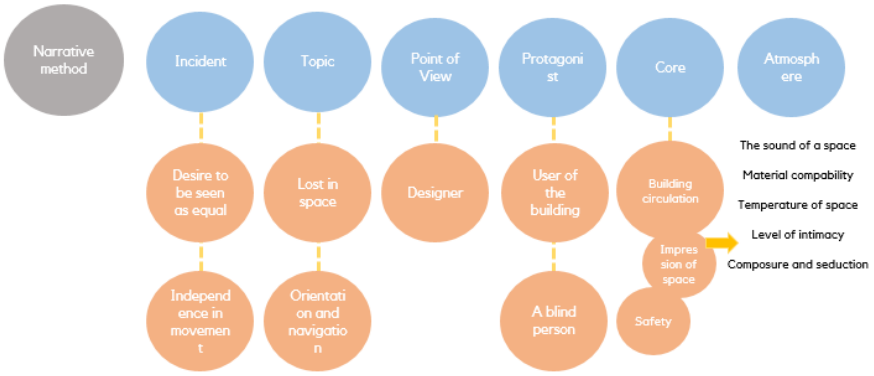


Figure 3.3 Design Process

Figure 3.4 Illustration of how each space can give different impression

To get better narratives for the design, I did a little survey to know sensual and atmospheric quality assigned to certain spaces that exist in the building. I ask them what do they think about a certain place. The survey is done among the students of ITS with seven respondents. The conclusion of the results are :

- Restaurant

  " Sounds of plates and people cooking, smell of the food
- Auditorium

  " Grand, a place to show something that doesn't disappoint, huge, calm"
- Massage Area

  " Relaxation, smell of flowers, oil fragrance, laying down"
- Co-working space

  " people having discussion, sound of books, gather together to work, smell of coffee, noisy"
- Garden

  " Nature, free, texture of the landscape"

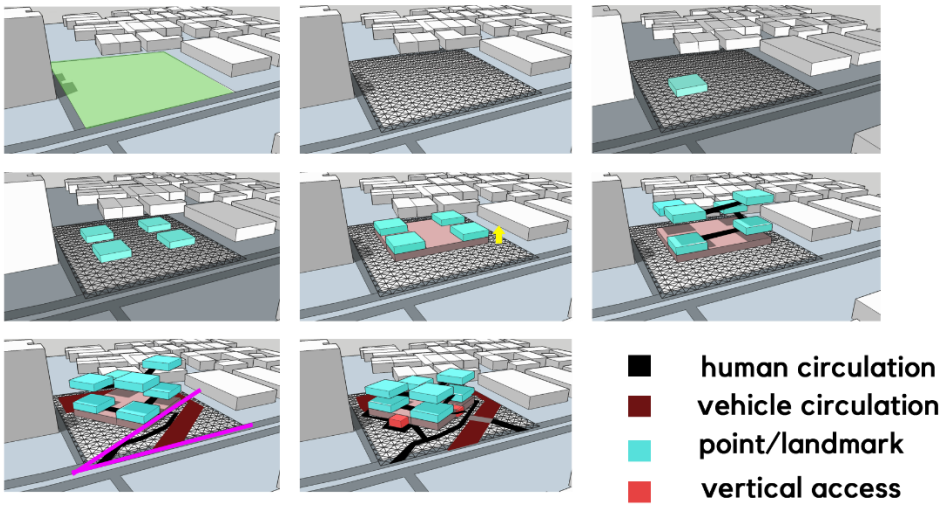
CHAPTER 4
DESIGN CONCEPT

4.1 Formal Exploration

In the process of designing the building, it is important to keep the approach of *phenomenology* in mind, where it stresses heavily in the sense of place to help the people with blindness with navigation in the building. However, the design also cannot be seperated from the criteria that has been mentioned before. The design makes use of this characteristic to make different atmosphere in space in order to ease people with blindness to orient themselves in the building. The concept of the circulation is influenced greatly by Peter Zumthor's method composure and seduction to create an architectural quality that makes the user feel that the building seducts him and does not direct him.

4.1.1 Mass Arrangement

The basic idea of the arrangement is creating 'point' and 'line' in the building. The points act as landmark that help the people with blindness and visually impaired to orient themselves int he building. The line connects points to points. The thinking process of the arrangement is explained below :



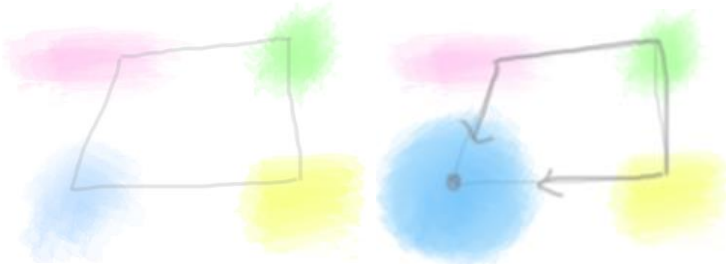


Figure 4.1 Mass concept. Each point is assigned as landmark. Prime landmark or the starting point is assigned in the entrance of the building

First, the 6x6 grid is placed in the site. The 6x6 grid is chosen based on the touching range of the people with blindness, which is 1.5. The circulation is made wide to accomodate various types of peple with blindness, which are the people who walk without whitecane, the people who walk with whitecane, and the people who walk with companion. After the grid is placed, the mass are placed. The main mass acts as landmark. The masses are rised from the ground to provide space for vehicle. The idea is to minimize the interuption and noise from the vehicles, creating a seperate area from the human activity. The masses are then connected by lines that act as path, also for the activities which require or produce less stimulaiton (not a landmark). The lobby area is assigned as the prime landmark or the starting point for the user to navigate easily.

4.1.2 Space Organization

	smell	hear	touch	blind/non blind
Lobby				
Foodcourt	xxx	xx	xxx	xxx
Massage	xxx	x	xxx	xx
Co-work	x	x	x	xxx
Auditorium	x	xxx	x	xxx
Pingpong	x	xxx	xxx	xxx
Sensory Garden	xxx	xxx	xxx	xxx
Music	x	xxx	xxx	x
Art	xx	x	xxx	x
Drama	x	xxx	x	x
Library	x	x	x	xx
Braille	x	x	x	x
Life-skill	x	x	x	x
NGO office	x	x	x	x
Gallery	x	x	x	xxx

Figure 4.2 Sensory table

In organizing the space, I tried to classify the space according to the sensory stimulation and the connection between the space. The highest rank of stimulation, which is the sensory garden, is placed in the first level, the same level as the lobby. The space that have many social interactions between the people with blindness and the people with normal vision are placed in the corners, acting as checkpoints, such as restaurant, auditorium and gallery area, massage area, and co-working space while associating characteristic of space to enhance the presence of the space. The spaces with less interaction are acted as route that connect between the check points.

4.1.1 Circulation

In determining the arrangement of space, it must be simple and easily memorable, easy to reach and make the user feels like it is impossible to be lost in the building. Therefore, a continuous kind of arrangement is chosen.

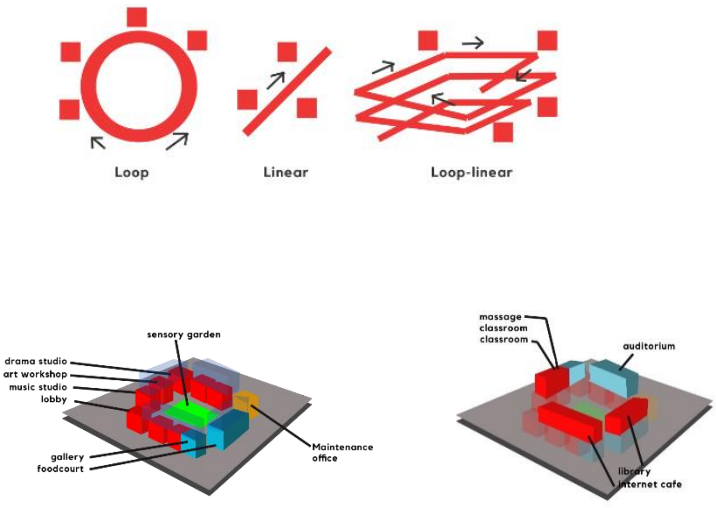


Figure 4.3 Mass arangement of the building

a. Elements of circulation

- Path

The path is the main circulaiton in the building. The path must be undisturbed by obstacle and consistent thorough the building to guide the user. The path is using non slippery and non reflective material

- Edge

  The edge of the path must have distinct quality from the path. The edge of the path is painted yellow and have different tactile quality from the path

- Space

  The space of the bulding has different quality form the space and edge and act accordingly to the space characteristic

b. Direct element for circulation

Figure 4.4 Tacdot that guide the user thourough the building

Tactdots are tactile paving designed for the blind and visually impaired that are slightly raised from the ground and give distinct sound when tapped by cane. The tactdots are placed as a direct guide for the user thougtough the building.

Figure 4.5 Tactile Room Sign

Tactile room sign is assigned in the front of every door in the building. The sign is written in braille and is placed 1.4 meters height from the floor.

4.1.2 Entrance

a. Assigning Landmark

" I have arrived "

To differ the building with the surrounding, the building tries to employ a different characteristic from the road and the outer environment, emphasizing its presence that can be sensed by the people with blindness and visual impairment. The key is to give identity to the building. As a person walks from the sidewalk, he feels that he slowly leaves the road behind him, walking toward a place different from the one he has left.

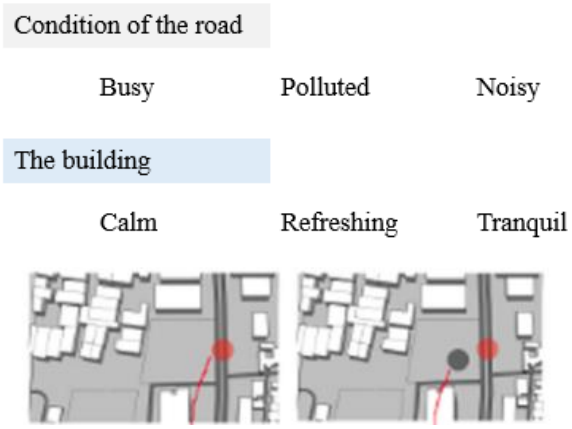
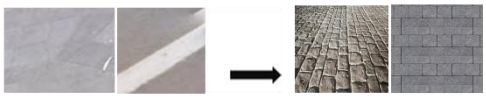


Figure. 4.5 Diagram that shows the road and the building differences



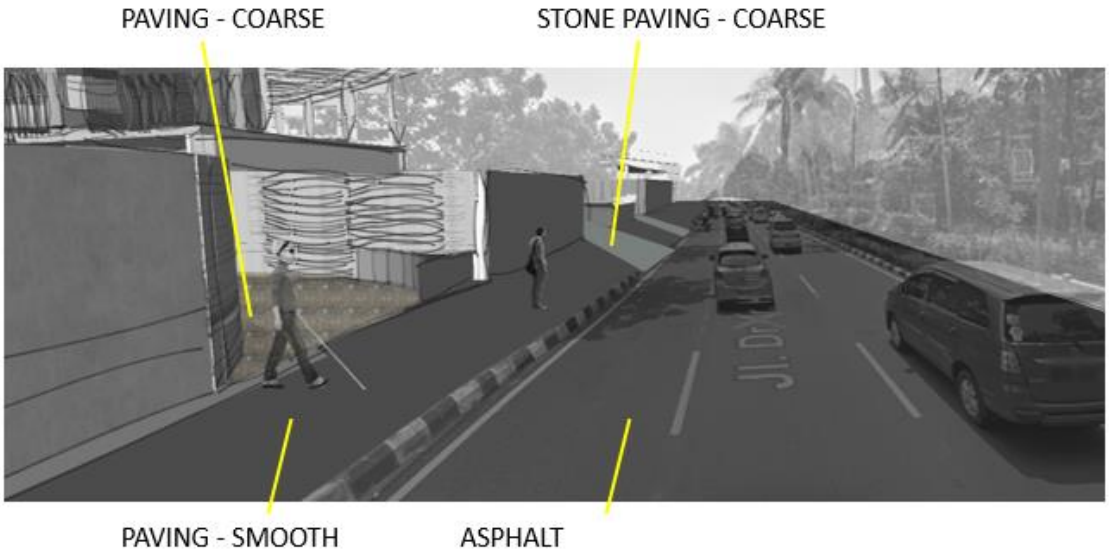


Figure.4.6 Diagram that shows the road and the building differences

The building is raised for about a meter to emphasize the presence of the building itself.

Figure. 4.7 Raised to emphasize the presence of the building

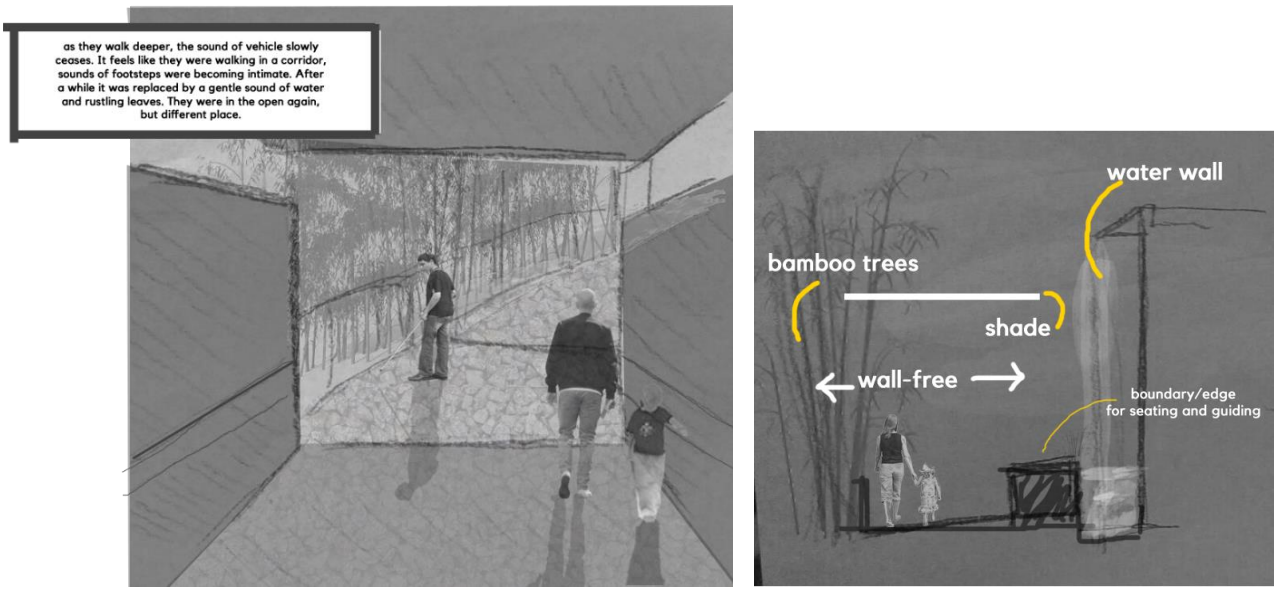


Figure. 4.8 Pedestrian corridor and water fall concept

Figure. 4.9 Conceptual render of the entrance sequence

As he slowly approaches, the voices of the road goes calmer, replaced by voices unlike the ones in the road, tranquil and calming.

The main landmark of the building will be placed near the entrance of the building to let the user know that he enters the building. The main landmark is also the place for lobby and the vertical transportation. The natural sound that is chosen is water

because the other benefit it produces such as lowering the temperature of the space by its vapour that can also provide sensual quality for people with blindness.

b. Lobby

" I'm inside the building"

Simple as knowing that one has already been inside the building is important for people with blindness and visual impairement. It is also important for them to know where the entrance and the exit is. That is why the lobby is assigned with distinctive sensory characteristics. As the visitor enters the lobby, the visitor would feel as if he was inside a place enclosed by waterfall. Water is assigned uniquely to the entrance and the lobby to employ the landmark role of the building in the form of aural and haptic quality. The water would act also as passive cooling to lower the temperature inside the lobby.

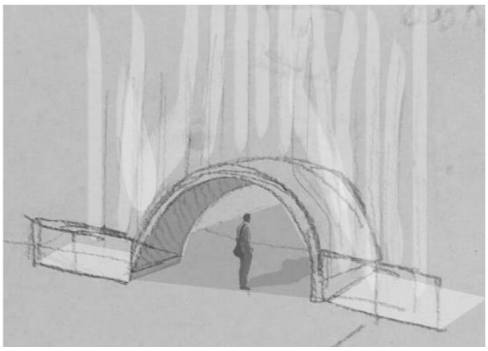


Fig. 4.10 Waterwall tunnel conceptual drawing

Fig. 4.11 Wisteria plant to gives pleasant odour.

Fig 4.12 Wisteria assigned in the trellis

c. Sensory Garden

" Get lost in nature"

The sensory garden is assigned to give a feeling of getting lost in nature, where as the user feel as if he/she is free to explore and experience different sensory sensations. The circular layout of the garden gives off an endless impression of the garden. The haptic rubber mound gives of the irregularities of the nature ground by its coarseness, smoothness, and irregularities, allowing the user to explore and inhibiting the sense of curiousity. The material of the mound is using poured-in-place rubber to make a "cushion falls" to the hard garden surface.

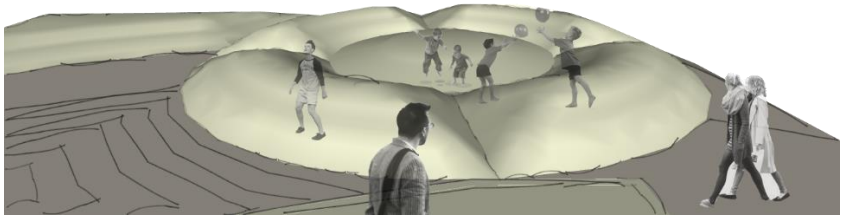


Figure. 4.13 Rubber mound area

Figure 4.14 Rubber material

The garden is also filled with relaxing smells from the flowers like lavenders, occulated roses without thorns (Rosa sp), and bergamots (Monarda fistulosa). The distant sound of water, rustling leaves of the trees, chattering from the restaurant, and the sound of bouncing ball from the pingpong can be heard from the garden but as the user walks deeer into the

garden, the user will find a circular space, surrounded by tall bamboos to reduce sound stimualtions from the outside, where the users can sit down and relax, as if they are sitting in a glade of a forest.

d. Restaurant

" I smell food and I'm hungry"

To differ one room to another, it's important to emphasize a certain sensual quality assigned to the space itself. For restaurant, the sensual quality of food is emphasized. That is to say that the design emphasizes the food itself and the process of cooking and enjoying it. To achieve this, the restaurant uses smell to attract and to give information about its presence to people. The use of open kitchen allows it to do so. Aside from the smell of the food, the sound of the cooking process also acts as attraction and information giver to the people with blindness and visual impairment.

The restaurant is also an open and social place for people with blindness. According to Bilyk in her theses "The Food Experiences and Eating Patterns of Visually Impaired and Blind People", one of the contributing factors that motivate people with blindness and visual impairment to eat in a restaurant is the social aspect it provides. The restaurant is provided with mainly communal seating.

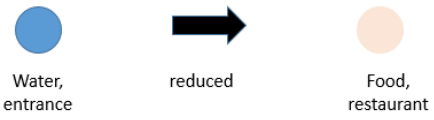


Fig 4.15 Diagram that shows the restaurant and the entrance

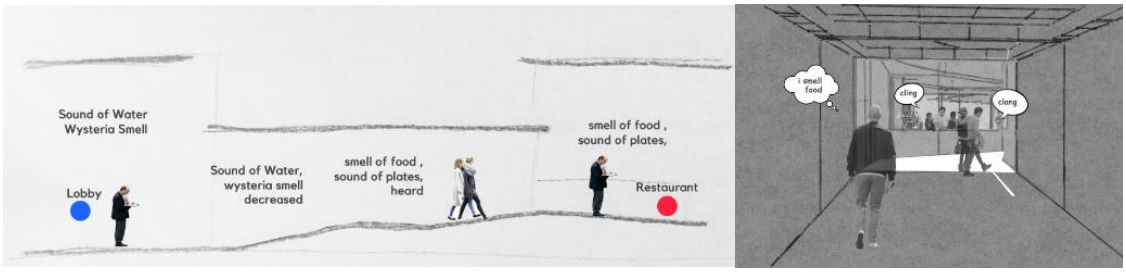


Fig. 4.16 Smell that draws the people near

e. Audtorium and Gallery area

" What a grand place. Such spectacular show"

The auditorium and gallery area is assigned to employ characteristics that can show a place that held a show or an attraction. To reach it, the previous room (music room) is made into a quiet area, where the sounds are absorbed .

Fig 4.17 Diagram that shows the restaurant and the auditorium and gallery area

The idea is to silence all the senses from the restaurant. The music area acts as the transition where sounds and smells are reduced. The ceiling is lowered to create intimate aural sensation, combined with the absorbing materials of the wall and acoustic panels on the ceiling. The area is alos using artificial cooling to help reduce sound and give a different haptic sensation. The rise of level the ramp provides also act as elements to emphasize the presence of the auditorium and gallery area. A large and reflective space creates a longer reverbration time. The roof is tilted toward the area to reflect the sound rather than releasing it to the music area.

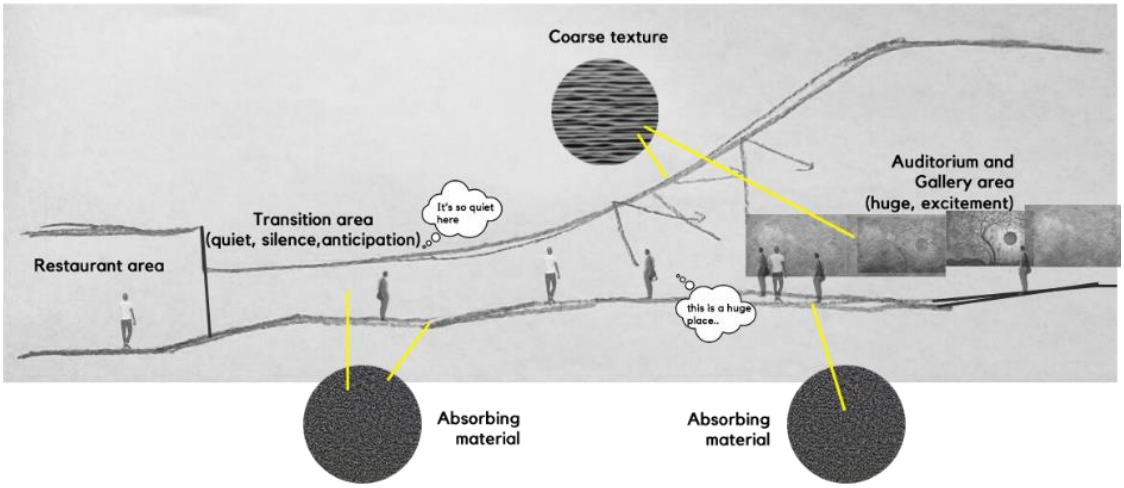


Fig 4.18 Conceptual drawing of the grand building and refelctive roof

The wall of the gallery is intended to be have coarse texture to diffuse the sound even more. The wall is also intended to be an education media by placing panels with different material (stones, woods, zinc,etc) and braille explanation of the materials.

f. Massage area

" *I feel at peace"*

The massage area is assigned to employ a characteristic of natural and relaxing place as well as intimate. The formation of the roof allowed the natural air to flow to the building. The lower ceiling of the massage class and room is intended to give more intimate feeling. The opening on each corridor between the rooms are planted with jasmine vines on the trellis, spreading relaxing smell to the whole area and amplyfying the area's presence.

Figure 4.19 Diagram that shows the auditorium and gallery area to massage area

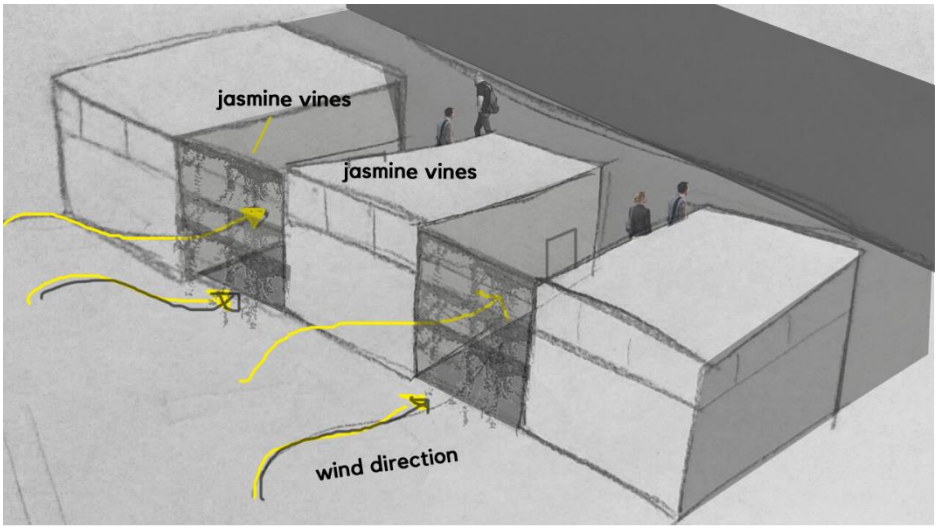


Fig 4.20 The opening on massage area

Aside from that, the massage area is also connected to the elevator and service area located just above the lobby, where the sound of water can be heard, enhancing the natural atmosphere as well as a sense of direction for the user.

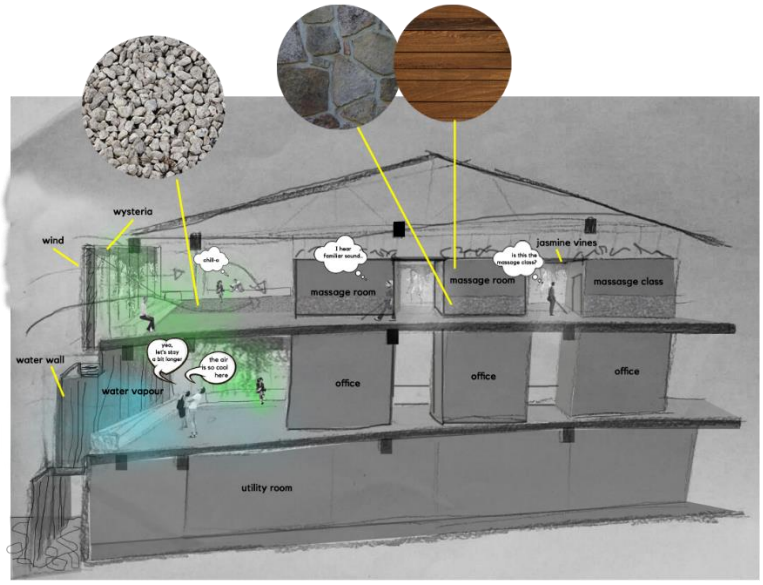


Fig 4.21 Massage and Lobby area

g. Co-working Area

" Time to discuss some stuffs"

The co-working space is assigned to held a social interraction between the people with blindness and visual impairement and people with normal sight. The space is assigned to be open and comfortable to have a discussion or simply to have a chat both for the blind and visually impaired as well as the normal sighted people. The atmosphere changed from the natural ventilated space with stimulations from the water, flower fragrance, and the gravels, to a calm place, less stimulated, and more focused.

The high ceiling gives off the impression of the openness while the acoustic absorbing panels are placed to balance the acoustic of the room.

Figure 4.22 Diagram that shows the massage area to co-working area

4.3.2 Safety

a. Parking Area

The parking area is located under the living space, to reduce the noise and pollution from the vehicle. The crossing between the user and vehicle is texturized and highlighted.

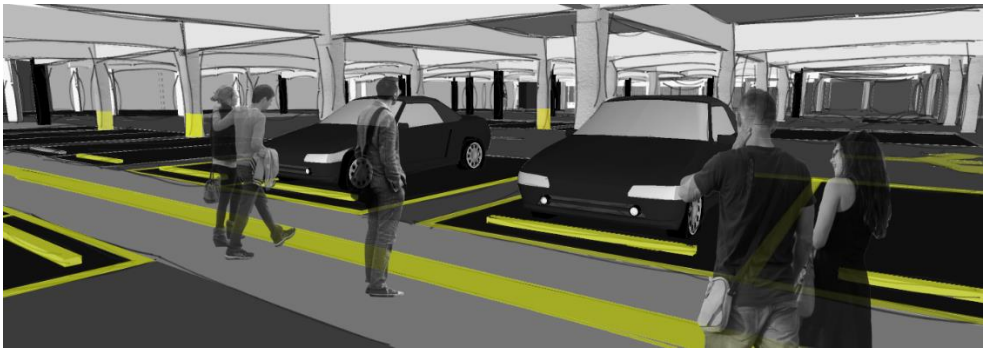


Figure 4.23 Parking area concept

b. Reduce Glare and Anti Slip

Figure 4.24 Epoxy sand grain flooring

The material of the flooring is using non-slippery material such as carpet, epoxy gravel floor. The floor and the wall adjacet to an opening/window are also using light colored material to prevent glare. The opening is also using blinds or clerestory window

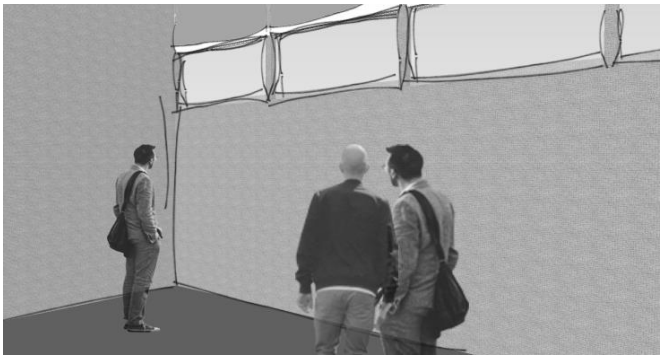


Figure 4.25 Clerestory window

c. Circulation breaker

The space of the building is assigned with circulaiton breaker to prevent people from cluttering, thus blocking the path. The circulation breaker act as waiting zones, seating areas, accordingly to the space they are in.

4.3 Technical Exploration

4.3.1 Structure

a. Concrete beam and Column Grid

Figure 4.25 Building's Structure

The building is using concrete beam and column. The size of the column vary according to the building's span, for the building is seperated into parts.

b. Roof Structure

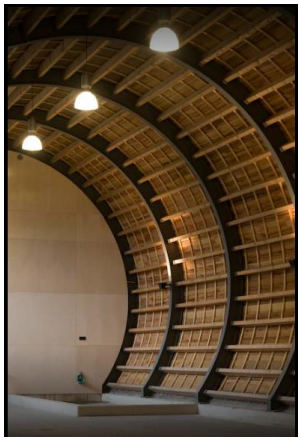


Figure 4.26 Girder Structure

To make a bent roof, the design is using steel girder that assigned to the steel column.

4.3.2. Utility

a. Waste water

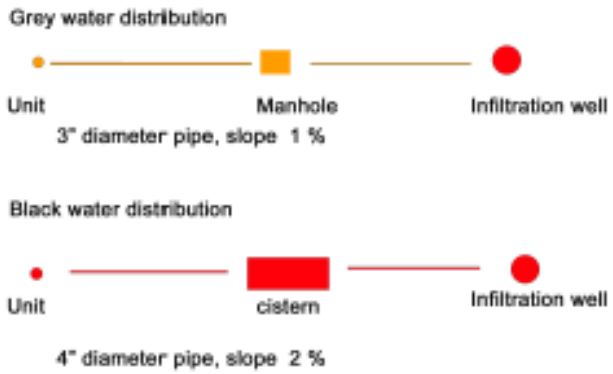


Figure 4.27 Waste water scheme

The grey water and black water are distributed from the unit to the cistern and infiltration well thorugh pipe with 3” and 4” in size.

b. Fire safety

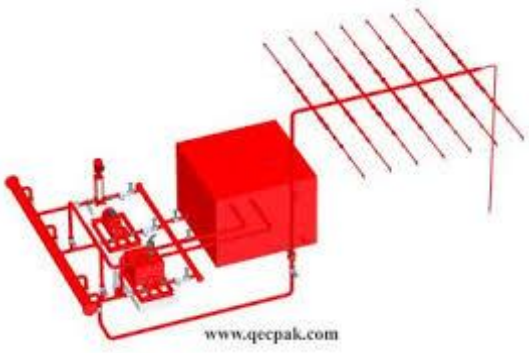


Figure 4.28 Fire safety scheme

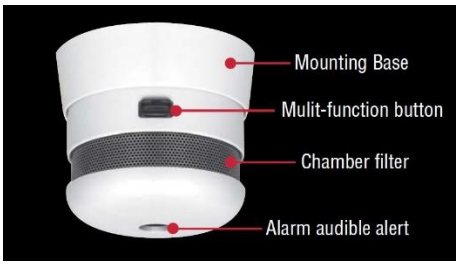


Figure 4.29 Audible Smoke Detector

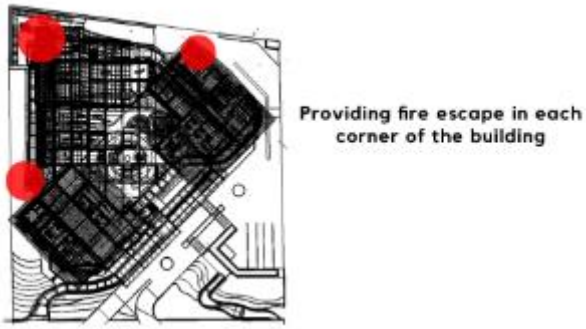


Figure 4.30 Exit route

The building is using audible smoke detectors that are assigned in each emergency exit of the buiding.

CHAPTER 5
DESIGN

5.1 Formal Exploration

Figure 5.1 Siteplan

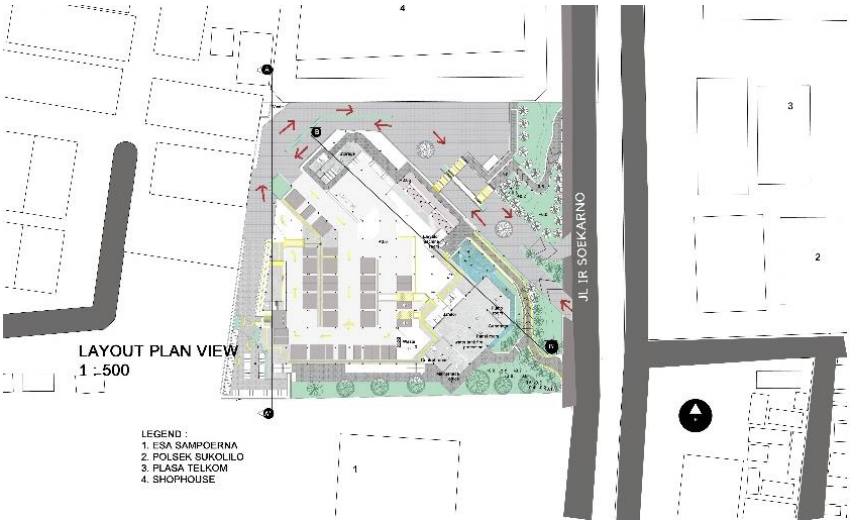


Figure 5.2 Layout Plan

The activity area is elevated above the ground. The spaces in the ground level are placed for the utility and maintenance room and parking area. There are two entrance in this building. The first one is in the front of the building that can directly

access the lobby, while the second one is the access from the parking area, located in the western site of the building.

The site is raised a meter from the ground. The pedestrian access is completed with ramp to accesss it and also to make perception (according to Gibson's) of the body postition from the road. Either accessing the building with vehicle or by walking, the user will hear the sound of falling water as he/she approaches the site. The bamboo trees located in the site act as noise barrier that block the noise of the road and also noise from the water itself (as heard from the outside). From the blind pedestrian point of view, as he/she slowly approaches the building, he/she would feel smooth horizontal texture in the wall, guiding her further to the building. The noise is reduced from the low ceiling of the corridor's roof, then slowly replaced by the sound of water and rustling bamboo leaves. The floor will slighlty raised by ramp and ff he/she continued touching the edge of the path/corridor, he/she would feel his/her hand brushed against the soft *daun seribu* shrubs. When the shrubs disappear, replaced by pond's water, that's when he/she almost reach the end of corridor and into drop zone area. He/she can choose to use ramp or lift for the disabled person.

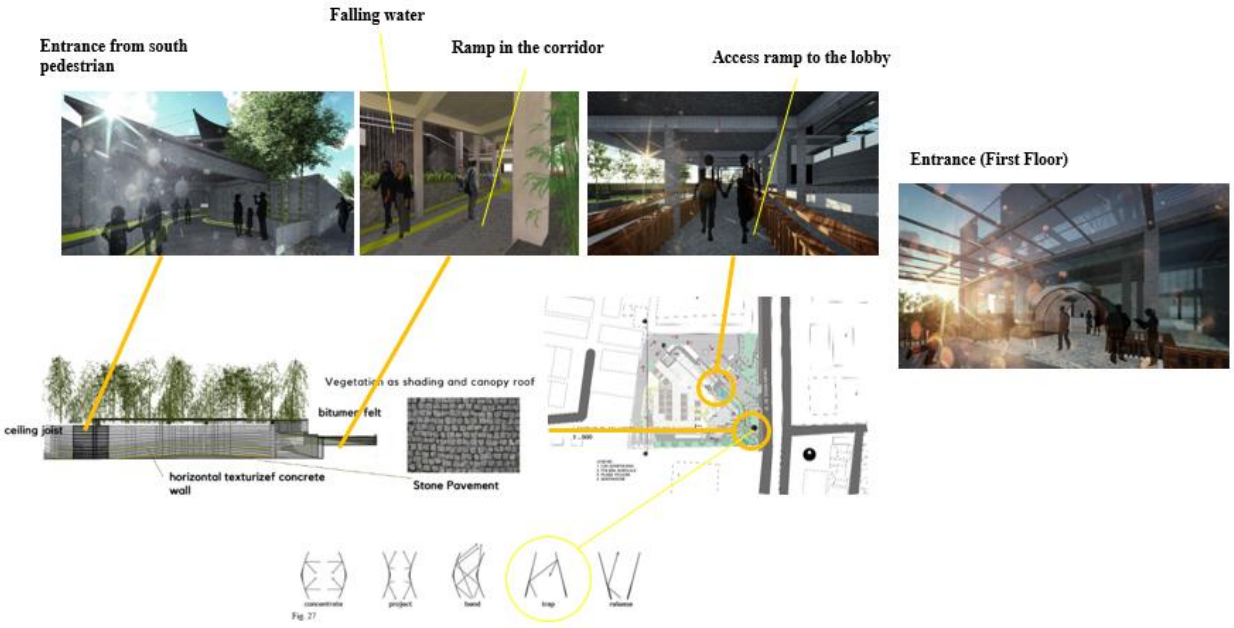


Figure 5.3 Scenes in the ground level

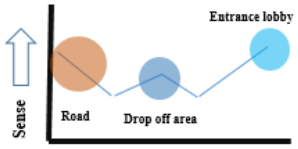


Figure 5.4 Sensory graph

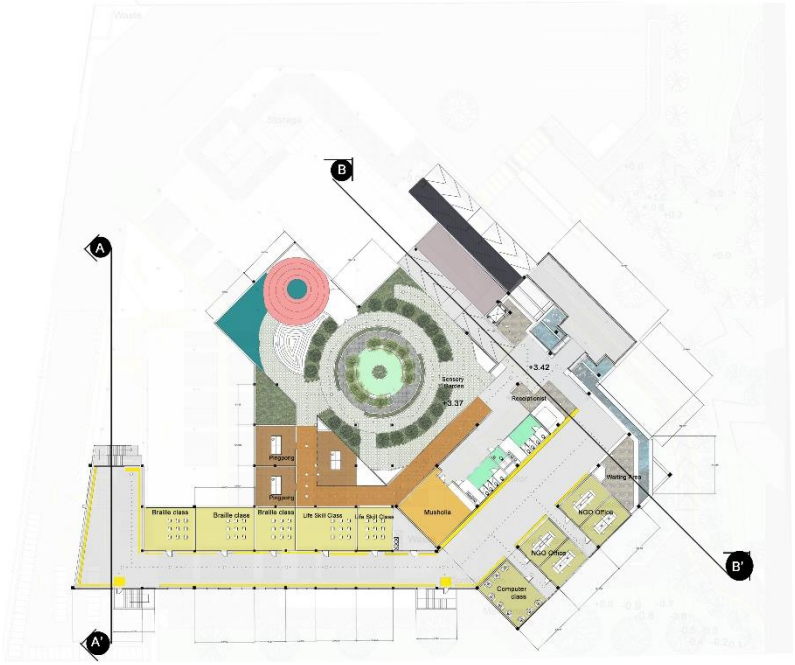


Figure 5.5 First Level Plan

The sound of water would decrease a little when taking the ramp before it amplifies slowly again (the ramp moves the visitor further before drives him/her closer again). After taking the ramp, he/she would enter the building through a glass tunnel entrance where he/she would feel the water pouring above their head. From there, the user would immediately meet the front desk. The users can choose their travel path, whether to go to the garden, wait in the waiting area, or go to the restaurant. The waiting area in this level is also where the cable trellis with the wysteria plant is located, which if integrated with water, providing rich sensual

quality that amplify the lobby's presence. The first level is also the place with less stimulation and social integration (between people with blindness and normal sight).

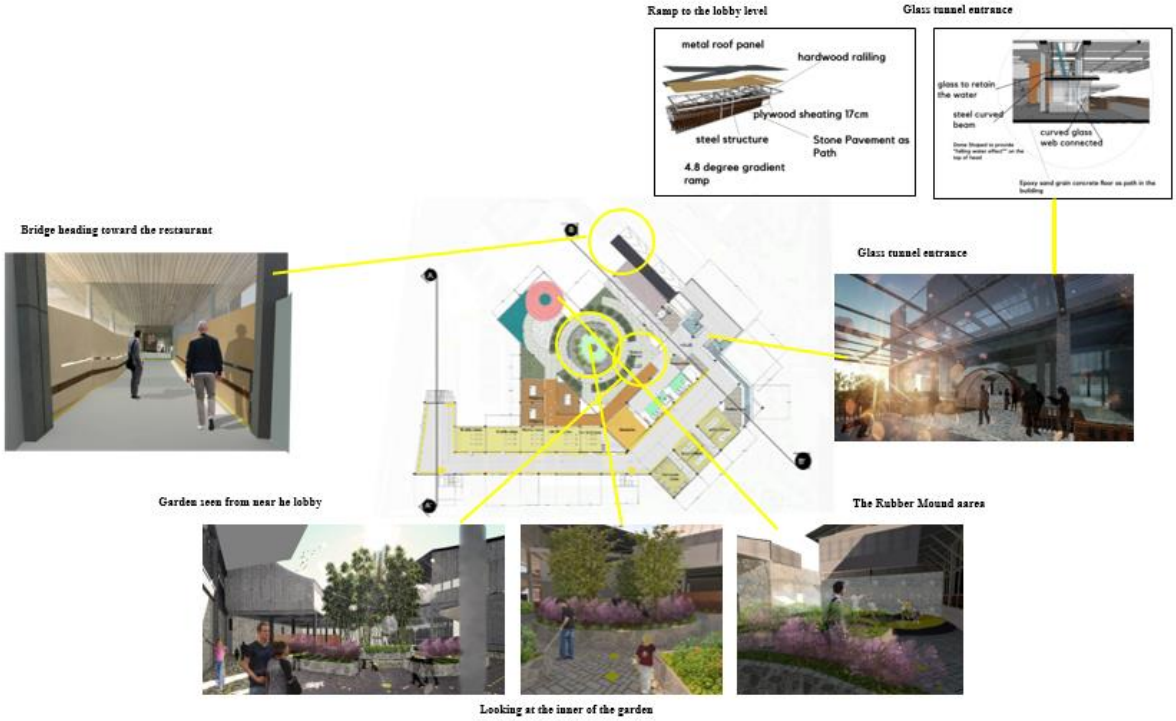


Figure 5.6 Scenes in the first level

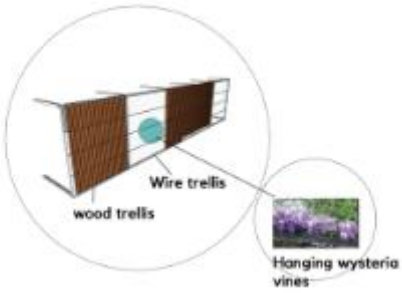


Figure 5.7 Wysteria and the wire trellis

Figure 5.8 Sensory Graph

The restaurant is using an open kitchen conept where the user can hear and smell the food from the bridge heading to the restaurant area. the restaurant's "space" is using light colored wooden floor that differs from the main path's surface. The restaurant has waiting list and cashier area in the notrhtern side that acts as circulation breaker if there were a lot of mass coming to visit the buikding. If the user follows the path, he/she would find a door that leads the user to the music area, where the impression would differ from the restaurant area, much cooler and quiter.

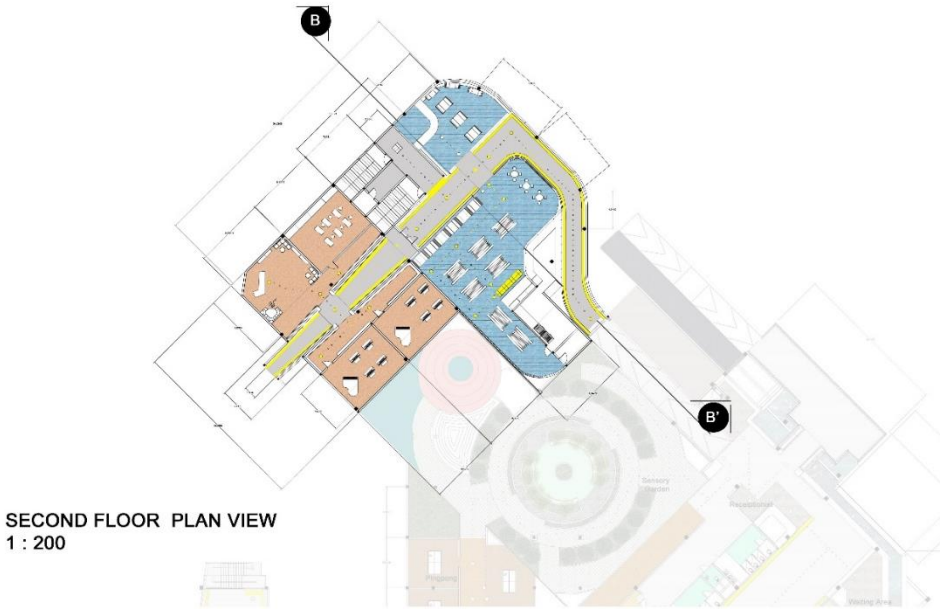


Figure 5.9 Second Level Plan

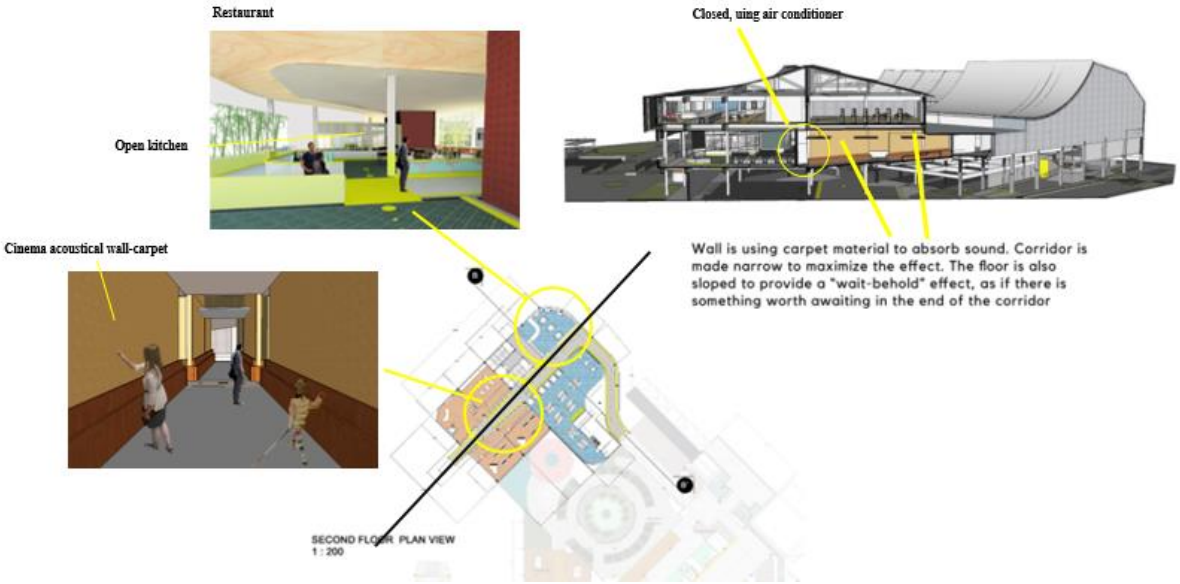


Figure 5.10 Scenes in restaurant- music - gallery area

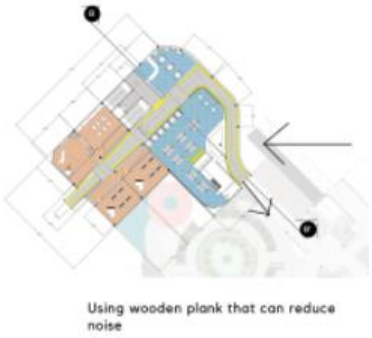


Figure 5.11 wind and the form of restaurant directs the smell and sound of the restaurant

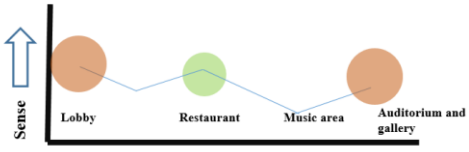
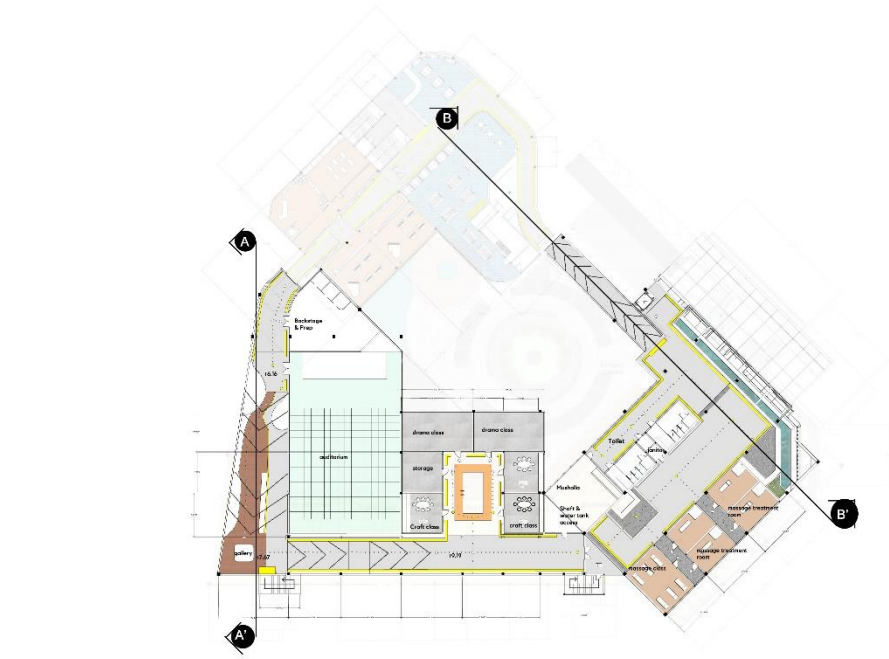


Figure 5.12 Sensory Graph

The visitor will feel sudden change of impression with the large scale of the auditorium and reflective surface which provide “surrounding” feeling to the visitors. The wall on the “space” side is used as the gallery area. The gallery area, aside from showing off the product that the blind and visually impaired made in the art class also educate them by placing material examples (wood, zinc, etc) that cover the wall surface using panels. The roof of the surface is using girder structure with galvalum board covering the outer side with wooden panel covering the ceiling.



THIRD FLOOR PLAN VIEW
1 : 350

Figure 5.13 Third floor plan view

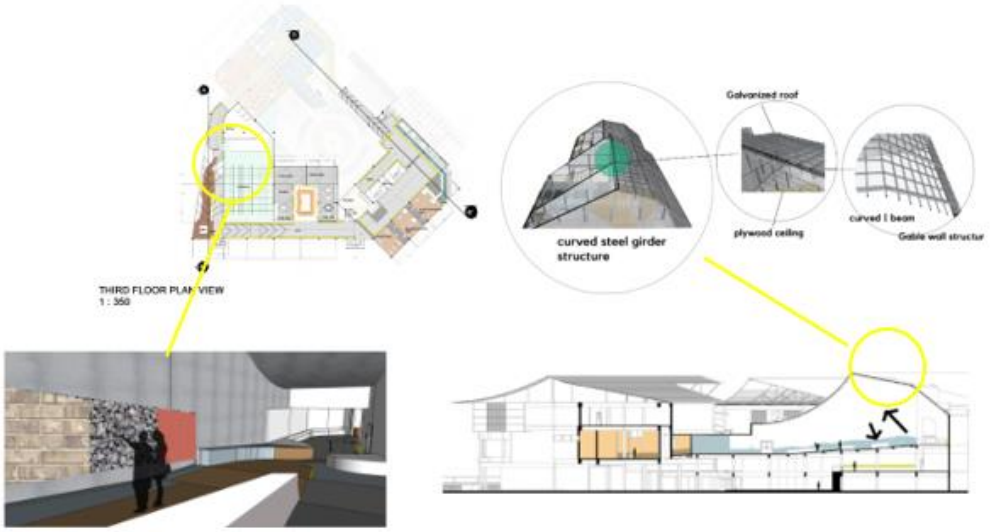


Figure 5.14. Scenes in third floor

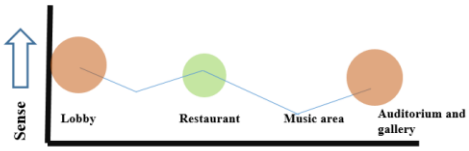


Figure 5.15 Sensory Graph

The massage area uses natural ventilation, unlike the previous area. This is intended to provide natural atmoshpere, with the distict sound of falling water from the lobby. It also acts as a guide to lead the people with blindness to teh “second lobby”, whereas toilet and elevator exist. The space of the massage area is used as waiting and relaxing space, where the floor is pushed about 5 cm to assign pebbles that can provide sound characteristic when steped upon. The massage room and class’ ceiling are also lower than the front desk’s and waitin garea to provide intimate quality.

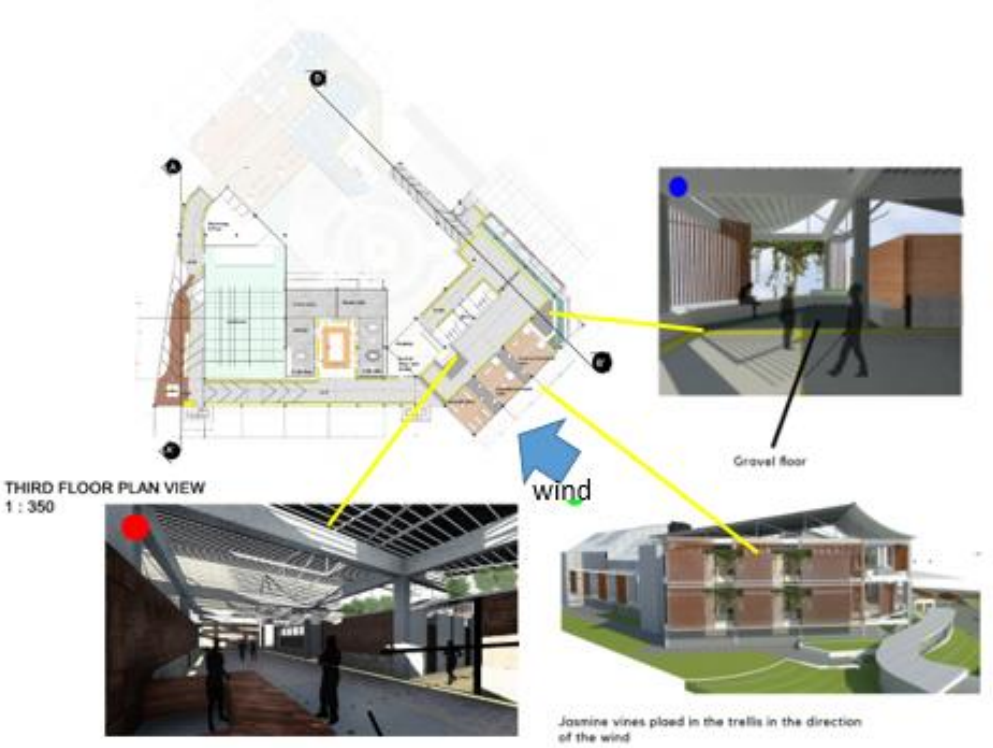


Figure 5.16. Scenes in the massage class area

Figure 5.17. difference of the roof height

The co-working area is located in the top floor, along with the library. The area is using air to provide better acoustic and also temperature if the space. The floor material of the space is using cork while the path remains consistent from the previous. The wall material of the area is using acoustical panel to provide food acoustical situation. Coffee table is loacted nearby the entrance to provide

immediate smell upon entering. The co-working area differs from the previous area by its lack of sensual stimulation, providing comfortable area to dicuss and study.

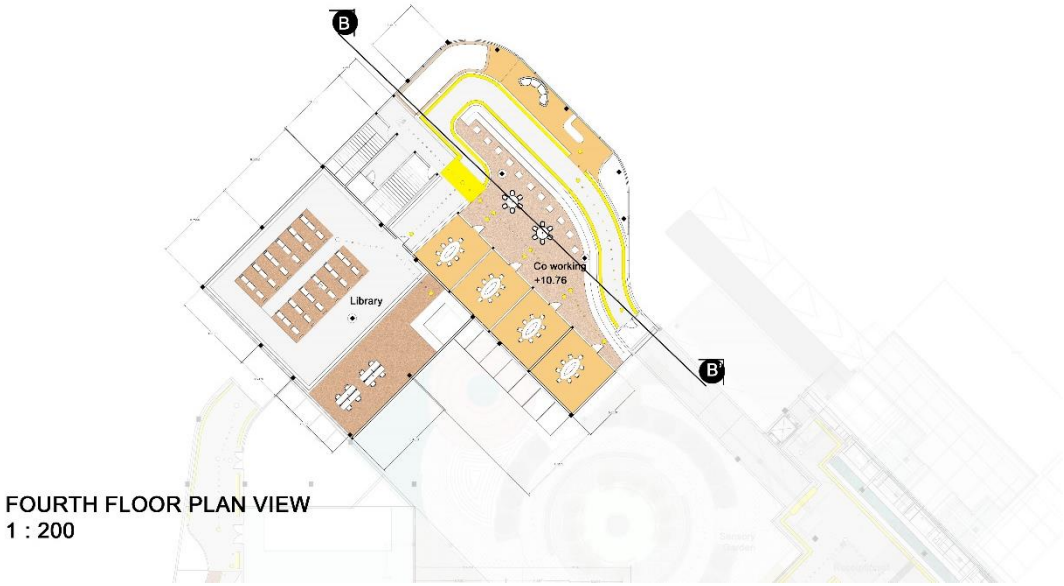


Figure 5.18. Fourth floor plan view

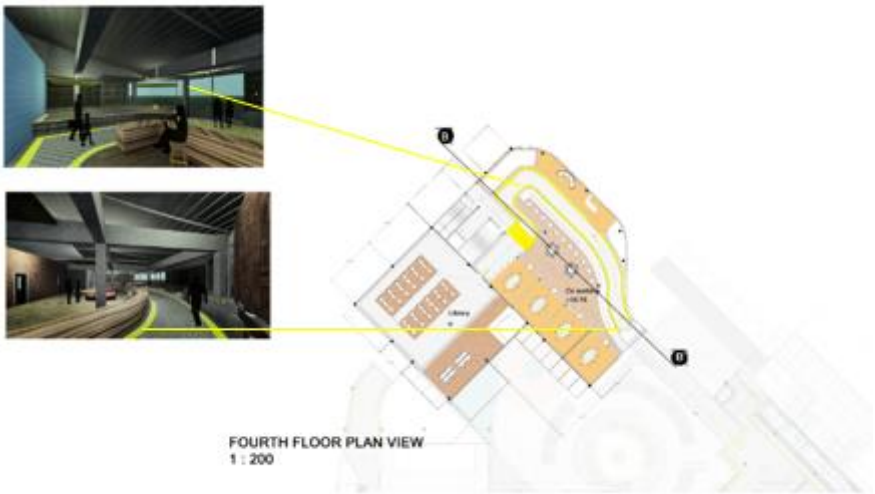


Figure 5.19. Scenes in fourth floor plan view

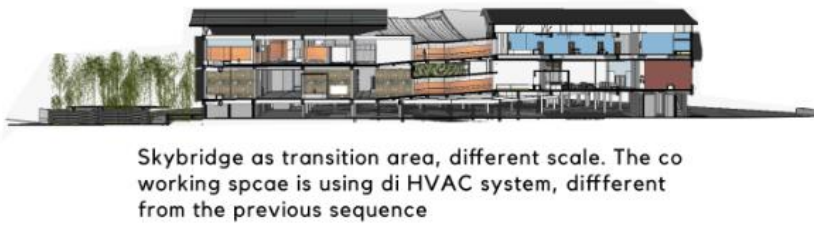


Figure 5.20. Section

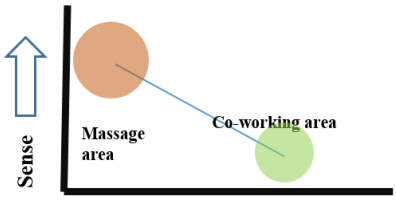
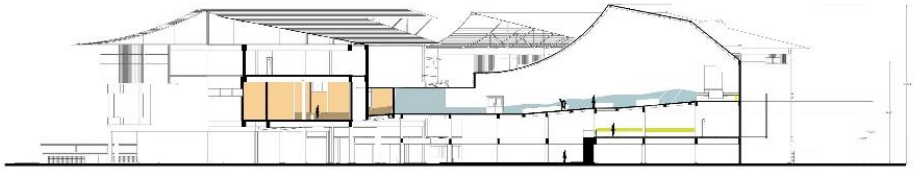


Figure 5.21. Sensory Graph

Figure 5.21 South view

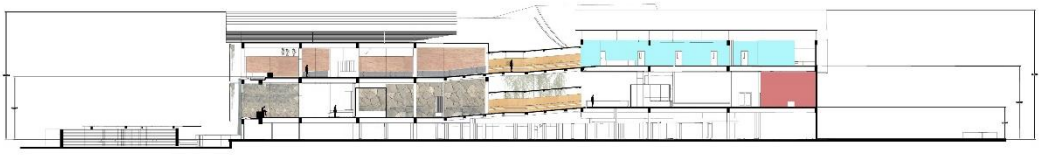
EAST ELEVATION VIEW
1 : 350

Figure 5.22 East view



SECTION PLAN VIEW A-A'
1 : 350

Figure 5.23 Section plan A-A'



SECTION PLAN VIEW B-B'
1 : 300

Figure 5.24 Section plan B-B'

5.2 Technical Exploration

5.2.1 Structure

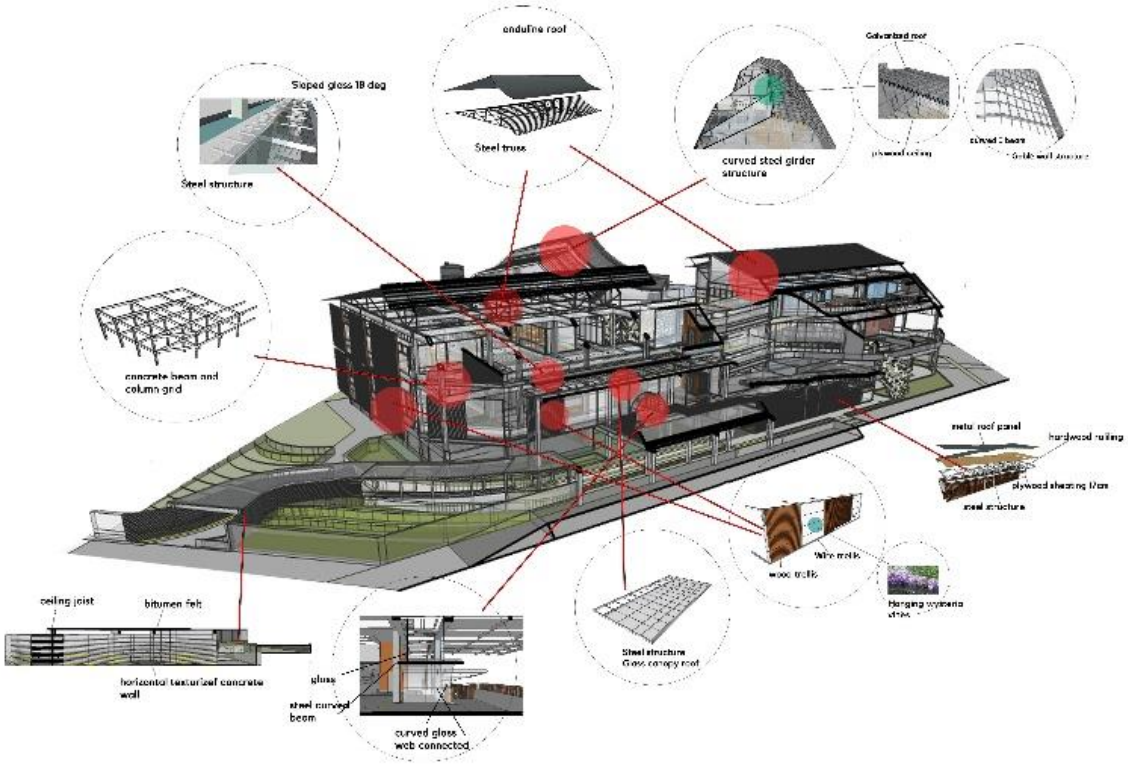
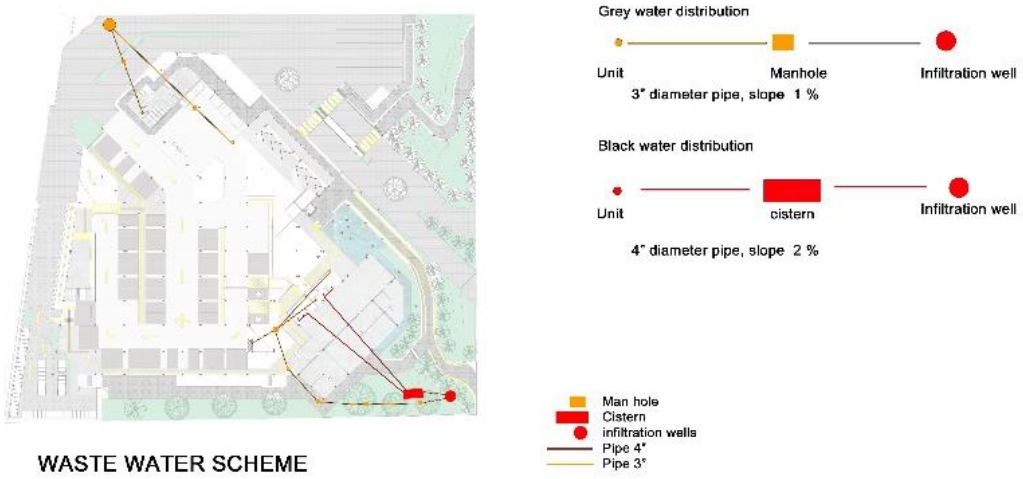


Figure 5.25 Structure of the building

5.2.2 Utility



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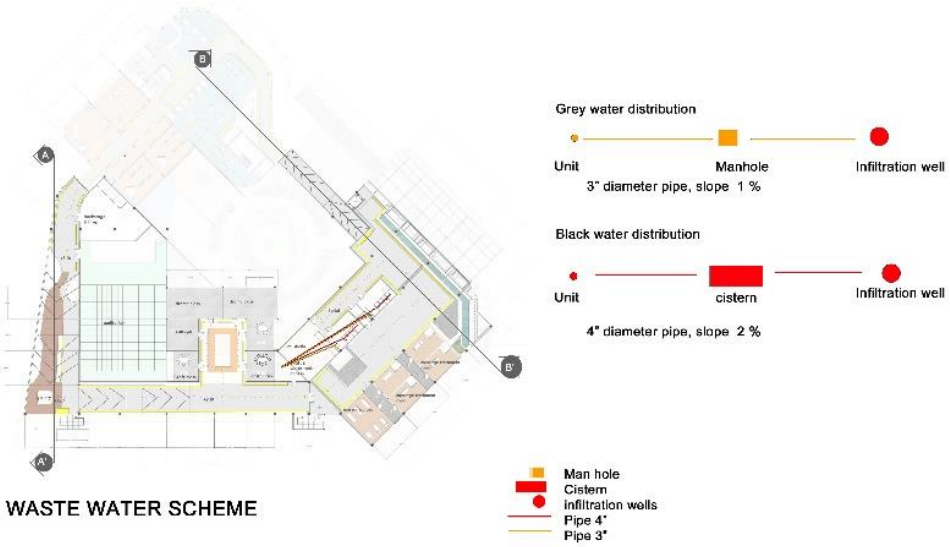

Figure 5.26 Waste water scheme third level

CHAPTER 6
CONCLUSION

Architecture is a human need, so it is only fair if it can accomodate people with all kind of ability. Architecture also should not create barrier between people, prioritizing the other whle marginalize the other one. This community center for the blind and visually impaired is trying to address those issue by providing an architecture that is accessible but not marginalizing the people with blindness and visually impaired by understanding that basically all people perceive space with their senses. By creating a multisensory environment, an architecture can help to raise dignity of people with blindness and visual impairment.

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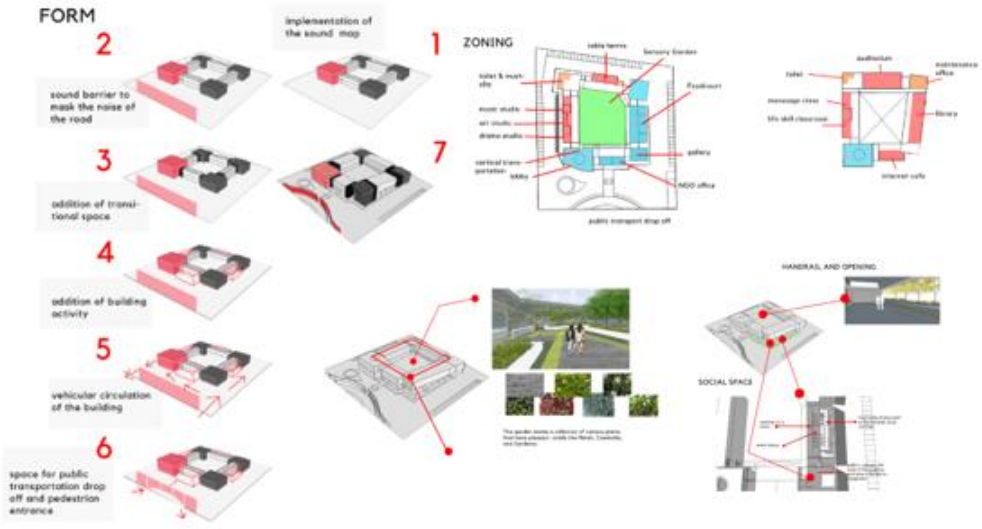
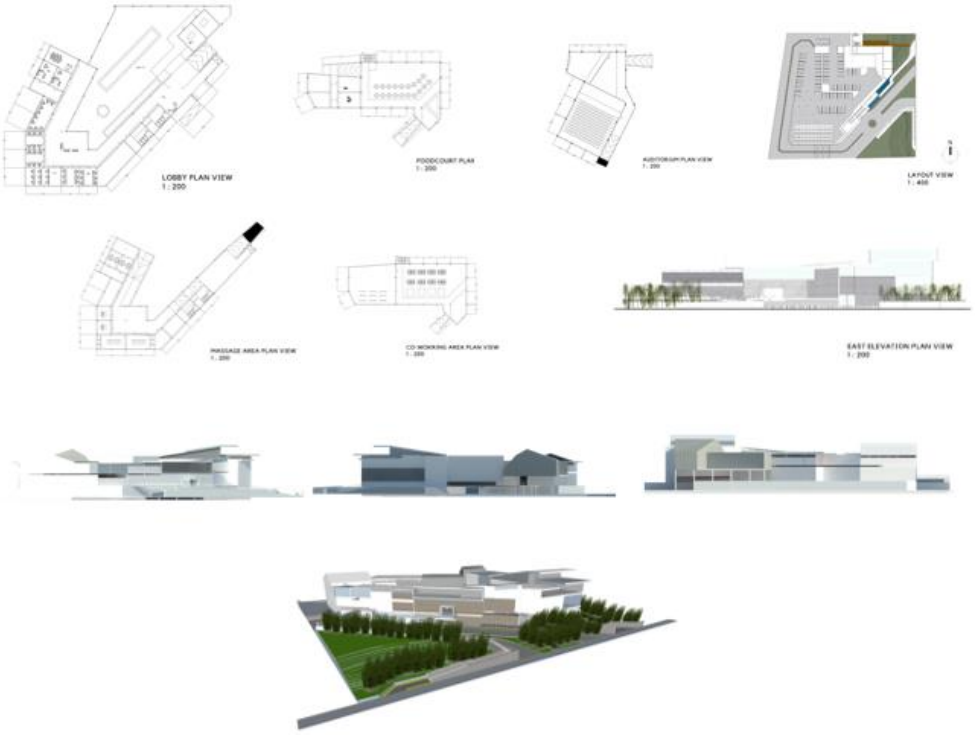
ATTACHMENTS



Attachment A. Initial design form (preview 1)



Attachment B. design form (preview 2)

Attachment C. design form (preview 3)

Literature Review	Interview
" If you can't touch it, you can't see it. It doesn't exist" – Scott White, Late Blind	PERMEN PU 30 should be architect's bible
You could walk by something and not know what is it" – Debbie Brown	I personally don't like noisy place. I've already been blind, I don't want to be "blind" in the ears either.
"I moved around a couple corners, down the hall, past two doors. I kept my hand on the wall so I knew what I was passing"	When walking, we can feel what is happening around us. It's deffferent from riding a car. When walking by ourselves, we can feel the blow of the wind, the texture of the road, hilly or steep, stepping on grass..
" I realized I was not where I should be. The approach was wrong. So was the angle of the door"	There is a path that direct us to each room. You can use braille on each door also..If there isn't any guiding block, handrail could help
"Everytime I go to class, I walk down that hall and pass that location and everytime I do, I smell coffee right before I hit the rubber mat"	On the outside, the road is usually asphalt or paving. When indoor, the floor is smooth, even, like this.
Touch and displacement of air give me more useful clues. There is a slight displacement of air when people walk past..Or I can feel a "whoosh" of cold or fresh air when someone opens a building door.	From the atmosphere and the condition of the path that I know..using sound cues, if there is something in front of me I would know it with my sound
Many blind people utter sounds from their mouths and perceive the area with the echo. This is more or less how I understand whether a place is small or large	In Galur (Blind School), there are markings (guiding blocks). However, they're confusing if there are only those. I have explored once (using that). I was confused when moving forward and the line was divided into two.
"I think courtyards and water increase the general quality of a building. Places with an open top and enclosed by three sides gives a sense of spaciousness and protection"	

Attachment D. Perception of the people with visually impaired

Attachement E. Bird-eye view

Attachment F. Scene 1

Attachment G. Scene 2

Attachment H. Scene 3

Attachment I. Scene 4

Attachment J. Scene 5

Attachment K. Scene 6

Attachment L. Scene 7

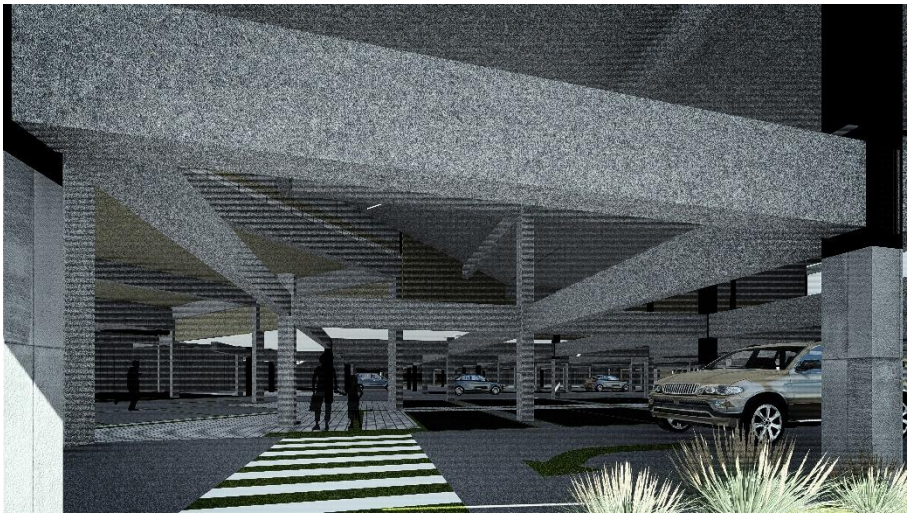
Attachment M. Scene 8

Attachment N. Scene 9

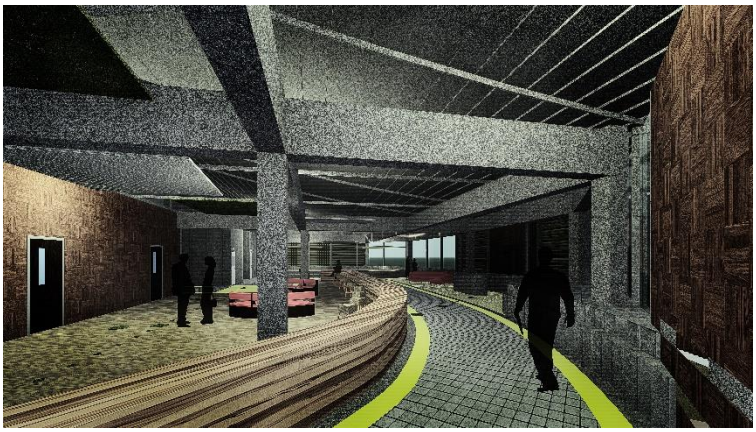
Attachment O. Scene 10

Attachment P. Scene 11

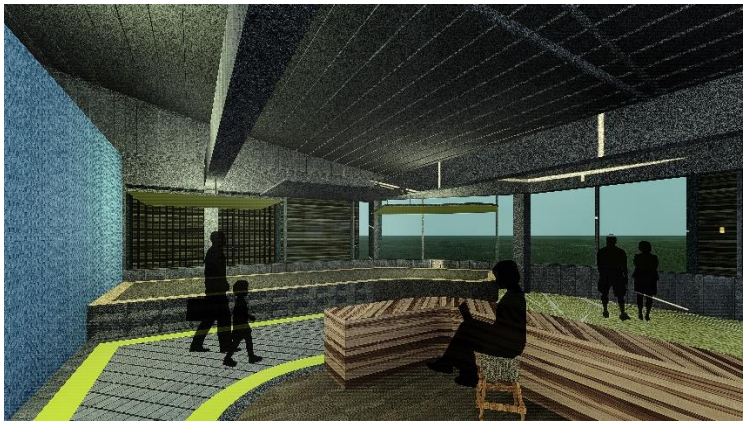
Attachment Q. Scene12



Attachment R. Scene 13 (Parking)



Attachment S. Scene 14



Attachment T. Scene 15