



FINAL PROJECT REPORT - RA.141581

BLURRING BOUNDARIES

JOYOBOYO INTERMODAL TRANSPORTATION HUB

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UNDERGRADUATE PROGRAMME
DEPARTMENT OF ARCHITECTURE
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INSTITUT TEKNOLOGI SEPULUH NOPEMBER
SURABAYA
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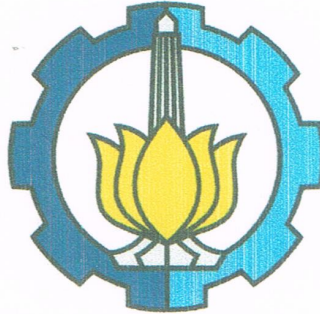
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STATEMENT OF VALIDITY

**BLURRING BOUNDARIES
JOYOBOYO INTERMODAL TRANSPORTATION HUB**



Written by:

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Has been defended and approved
by the Examiner Team of Final Project RA.141581
Department of Architecture FTSP-ITS on 15 June 2016
Score : AB

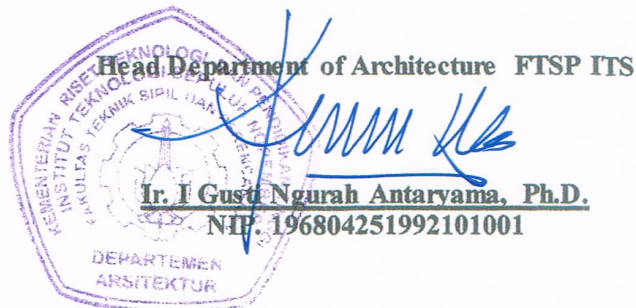
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STATEMENT OF ORIGINALITY

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Final Project Title : Blurring Boundaries – Joyoboyo Intermodal Transportation Hub

Period : Second Semester Year 2016 / 2017

Hereby declare that I am the sole creator of my final project. I assert that all works shown in my final project are done by myself and are not a mere duplication of the work of others (original). If I plagiarize the work of others, I am willing to accept the academic sanctions given by the Department of Architecture FTSP- ITS.

Thus, statement I wrote with full consciousness and will be used as a requirement to complete the final project RA. 141581.

Surabaya, 6 June 2017

Assigned,



Rr Arinta Ratih Nurindahsari
NRP. 321310054

ABSTRAK
TANPA BATAS
PUSAT TRANSPORTASI ANTARMODA JOYOBOYO

oleh
Rr Arinta Ratih N.
NRP: 3213100054

Ruang bukanlah hal yang nyata, dan perlu ditentukan oleh seperangkat batasan untuk menciptakan perbedaan antara dua wilayah. Batas itu sendiri bisa diklasifikasikan sebagai batas fisik dan batas psikologis. Namun ruang tidak hanya didefinisikan oleh batas-batas yang kokoh tetapi juga oleh batas-batas seperti furnitur, garis, langkah dan platform yang tembus pandang, atau bahkan batas-batas maya yang tidak terlihat secara fisik namun terasa jelas.

Surabaya sedang merencanakan sebuah Transit Oriented Development; sebuah area terintegrasi untuk memberikan kualitas hidup yang lebih baik. Salah satu ide utamanya adalah Terminal Joyoboyo, yang akan mengakomodasi beberapa moda transportasi, seperti bus pariwisata, monorel, trunk, feeder, taksi, dan tempat parkir untuk kendaraan pribadi, yang kemudian menimbulkan masalah; bagaimana mengintegrasikan kawasan dengan pusat terminal antarmoda yang disebutkan sebelumnya, ke dalam bangunan dengan batas yang minimum, sehingga sesuai dengan konsep TOD.

Kata kunci: Boundaries, public space, spatial function.

ABSTRACT
BLURRING BOUNDARIES
JOYOBOYO INTERMODAL TRANSPORTATION HUB

by
Rr Arinta Ratih N.
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Space is not a tangible matter, and it is need to be defined by set of boundaries to create the distinction between two areas. Boundaries itself can be classified as physical boundary and psychological boundary. Yet a space is not merely defined by solid boundaries but also by translucent boundaries, furniture, lines, steps and platforms, or even virtual boundaries that are not physically visible but mentally evident.

Surabaya is planning a Transit Oriented Development; where an area is integrated to provide better quality of living. One of the main idea is Terminal Joyoboyo, which will accommodate several transportation modes, such as tourism bus, monorail, trunk, feeder, taxi, and parking lot for private vehicle, which then leads to the problem; how to integrate the area with the intermodal terminal hub stated before, into a building with fewer boundaries, so that it will suit the TOD concept.

Keywords: Boundaries, public space, spatial function.

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CHAPTER I

INTRODUCTION

I.1 Issue Background

Space is defined as the height, depth and width within which all things exist and move. Space is everything. It is our universe, our undefined surroundings, even beyond the earth's atmosphere. But space is something absent, something we cannot touch, something that can only be defined by other, physical elements.

Space is not a tangible matter. The streets and the public squares are spaces, they are defined by very clear boundaries: buildings. The way space was used in the ancient times shows that space is a psychological boundary. In today's society space is the area defined by tangible materialistic boundaries. In order to create space, a set of boundaries is created to allow a 'void' between them and to create the distinction between two areas, outside and inside. To create space is thus to create boundaries and to separate.

What happens if the building happens to be a fluid space? What if there is no physical boundary? Do we really need boundary? If so, how closed our boundary should be? Or we can start with the very basic question, what is boundary? Does boundary make people feel safe? Does it

increase productivity? Or, on the other side, it will make people feel restricted?

"We have no longer an outside and an inside as two separate things.

Now the outside may come inside, and the inside may and does go outside.

They are of each other..."

- Frank Lloyd Wright

I.2 Issue and Design Context

"If architecture is the relation between occupants and space, then why does the first thing we made is the wall?"

- Kengo Kuma

Space is not a tangible matter. The streets and the public squares are spaces, they are defined by very clear boundaries: buildings. The way space was used in the ancient times shows that space is a psychological boundary. In today's society, space is the area defined by tangible materialistic boundaries. In order to create space, a set of boundaries is created to allow a 'void' between them and to create the distinction between two areas, outside and inside. To create space is thus to create

boundaries and to separate. The way people perceive space may differ from one and the others. There are lot of aspects that may affect how we perceive space; experience of our senses, sensation of smell, sound, and even touch.

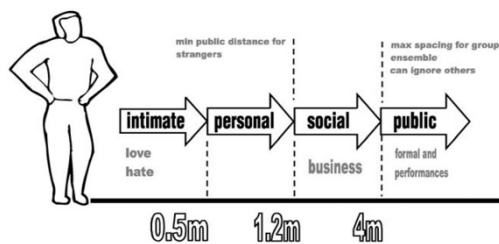


Figure 1 Proxemics Theory

(Source: Bryan Lawson, Language of Space, 2001)

Boundary itself, as defined by Merriam Webster, is “a point or limit that indicates where two things become different”, while in architecture, there is not any fixed definition about boundary itself. Boundary can be simply seen as physical boundary or psychological boundary. It is more common to refer to space as the void created between solid matters.

There are many types of boundary; such as the usage of steps and platform, spatial layering, sunken area, wall, glass window, and etc. Wall, has practically been recognized as a separator of areas, thus creates an enclosed space for human habitation. It defines space. Yet a space is not merely defined by solid boundaries but also by translucent boundaries, furniture, lines, steps and platforms, or even virtual boundaries that are not physically visible but mentally evident. Different types of boundary may contribute to different nature

and language of a space, and also, a boundary may not just a ‘wall’ of separation, but a ‘wall’ that links two or more different spaces.

The boundary must allow a passage between the inside and the outside spaces. The most interesting phenomenon is when the definition of the boundary itself is being questioned. It can be done in a form of a window, a door or an opening. And those openings create the transitional space between in and out. Those openings challenge the role of the boundary, they protect the user from the outer space, but they no longer create the strict separation between the inside and the outside space.



Figure 2 Change of Ground Texture

(Source: Clinton Cole, ‘Wall-less’ Architecture, 2012)

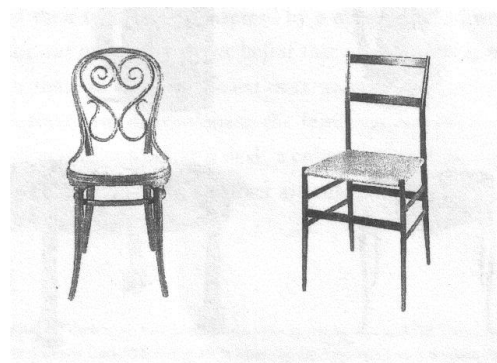


Figure 3 Different Mood

(Source: Clinton Cole, ‘Wall-less’ Architecture, 2012)

A box creates a very rigid separation between the inside space and the outside space, but the definition of space does not have to be a very rigid one, it is hardly ever just a closed box. Using just one or two elements could be enough to grasp the feeling of a space. Illustration above is an example of a space created with only a roof construction and some linear elements holding it up. The space is defined by the roof; there is no physical separator between the area that is protected and the area that is not, the feel of inside and outside remains, but the relation between the inside and the outside changes considerably. The inner space is open to the outer space. The movement between the two is free and there is nothing blocking the sight in either direction. Some combinations allow us to give a direction to the space.

How do you perceive boundary?

How does the boundary-less concept affect the building?

Will boundary-less building make a better spatial experience?

Design Context

Future planning of Surabaya to be better liveable city; friendlier to the pedestrian and encourage people to use public transportation instead of using their own. In order to achieve it, one of the plans are to create TOD (Transit Oriented Development).

TOD is the functional integration of land use and transit through the creation

of compact, walk able, mixed use communities within walking distance of transit corridors or nodes. TOD brings people together, jobs, and services and is designed in a way that makes it efficient, safe, convenient and attractive to travel in public transport in a sustainable way.

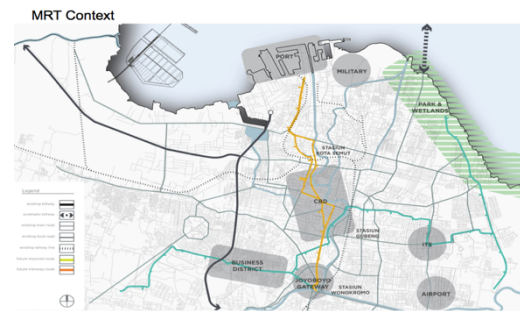


Figure 4 City Planning

(Source: Surabaya Urban Corridor Development Program)

I.3 Design Criteria

- The building should allow function flexibilities, to let visitors self-interpret the meaning of space.
- Less furniture, clearer space



Figure 5 Less Furniture

(Source: Self Analysis)

- Interior must be moveable



Figure 6 Moveable Cart

(Source: Self Analysis)

- The building should be able to provide clear direction of circulation, to reduce the risk of overlapping and confusion.

- Visual connectivity to ease wayfinding



Figure 7 Visual Connectivity

(Source: Self Analysis)

- Centralized circulation



Figure 8 Centralized Circulation

(Source: Self Analysis)

- The building should be an eye-catching figure, to be a landmark that represents the district and make it easier to be found.

- Stand out (visually offers something different)



Figure 9 Shape and Greenery

(Source: Self Analysis)

CHAPTER II

PROGRAMMING

II.1 Programming

AREA	ROOM	STANDAR D (m2)	CAPACITY	SOURCE	CALCULATION	TOTAL AREA
Public transpo rtation area	Departure area	0,93 m2 @person	100 person	AJM	0,93 m2 x 1.000	930 m2
	Arrival area	0,93 m2 @person	2.000 person	AJM	0,93 m2 x 1.000	930 m2
	Bus lane	3,5 x 100 m	6 pathways	SLJ	350 m x 6	2.100 m2
	Total					3.960 m2
Retail	Retail	48 m2 @person	20 unit	SNU	48 m2 x 20	960 m2
	Kiosk	12 m2 @person	40 unit	A	12 m2 x 40	480 m2
	Eatery	1,4 m2 @person	300 person	SNU	1,4 m2 x 300	420 m2
	Café	6,5 m2 @unit	10 unit	A	6,5 m2 x 10	65 m2
	Service circulation	40% restaurant 's area	-	A	600 m2 x 40%	240 m2
	Toilet	25 m2 @unit	2 unit	N	25 m2 x 2	50 m2
	Total					2.215 m2
	Electrical room	-	-	A	-	80 m2
	Pump room	-	-	A	-	188 m2
	Generatin g set & panel room	-	-	A	-	85 m2
	Total					381,5 m2
Parking area	Car parking	12,5 m2 @ person	50 unit	A	12,5 m2 x 50	625 m2
	Motor- cycle parking	2 m2 @person	150 unit	A	2 m2 x 150	300 m2
	Loading area	10% parking area	-	N	65,2 m2 x 10%	6,25 m2
	Total					931,3 m2

Table 1. Programming

Notes:

- N : Neufert Architect Data
- SNU : Standard for New Urban
- SMPD : David Man, Shop a Manual of Planning and Design
- AJM : AJ Metric
- SLJ : Standarisasi Lintas Jalan dan Rel
- TSS : Time Saver Standard
- A : Assumption

II.2 Site Description

Lahan berlokasi di wonokromo. Surabaya dengan luas 16.658 m² . dengan KDB 75% dan KLB 450%. Dengan garis sempadan sisi utara dan timur sebesar 8 meter. Dan di sisi selatan sebesar 6 meter dan disisi timur sebesar 20 meter.



Figure 10 Proposed MRT Location

(Source: Conference World Bank)

There will be 5 proposed sites for the MRT corridor; Jembatan Merah, Tunjungan, Keputran, Joyoboyo and Mayjen Sungkono. The sites were chosen as a representation of different urban conditions as they occur along the MRT corridor. The site chosen is the one in Joyoboyo. The proposed building will be built at Joyoboyo Terminal, with total area of 1,2 Ha which is strategically located between Jl Joyoboyo and Jl Wonokromo.



Figure 11 Joyoboyo Aerial View

(Source: Conference World Bank)



Figure 12 Inside Joyoboyo

(Source: Conference World Bank)

Joyoboyo has several key site features; it is one of the entrance to Surabaya from the south, key crossing of the Wonokromo River, proximity to Wonokromo Railway Station and Wholesale Market, it is somehow also associated with Surabaya Zoo. Joyoboyo is adjacent to Surabaya Zoo in north side, Department of Transportation office in east side, St. Yosef elementary and junior high school in west side, and Wonokromo River in south side. The diversities of building's function around site are challenging, since there are zoo, school, office building, small businesses, and many housings since it is also near residential areas, but mostly dominated with small business.



Figure 13 Joyoboyo Site View



Figure 14 Joyoboyo Front View



Figure 15 3D View of Joyoboy

PARAMETER	POTENCY	PROBLEM	PROPOSED SOLUTION
Activity	<ul style="list-style-type: none"> - The buildings / areas nearby have their own activity, each are different - The areas nearby have their own program 	<ul style="list-style-type: none"> - The peak hours of each areas are closed to each other 	<ul style="list-style-type: none"> - Clear direction on how to get to the destination - Alternative access
Circulation	<ul style="list-style-type: none"> - It is basically located near a junction, which means it is somehow people will always be passing through despite the time 	<ul style="list-style-type: none"> - Each of the buildings has their own circulation which some time may be crossed with each other 	<ul style="list-style-type: none"> - The circulation should be defined clearly so that it will not disturb each other activities
Accessibility	<ul style="list-style-type: none"> - One of the entrances to the city - Easily accessible 	<ul style="list-style-type: none"> - Located a bit far from the business district - The program should be arranged attractive enough so that people will come, and not only just passing by 	<ul style="list-style-type: none"> - The building should be able to represent the district
Segmentation	<ul style="list-style-type: none"> - Diversity on user (age, occupancy, preference) 	<ul style="list-style-type: none"> - Diversity on economy level - If the slum area is not re-located, the building may be affected 	<ul style="list-style-type: none"> - Using the right material, and the placement of it

Table 2.Site description

Based on RTRW (Urban Land Use Plan) Surabaya 2013, Surabaya will be divided into 12 development units. Joyoboyo is located in Development Unit 7 Wonokromo, which will be aiming to accommodate main activities like housing and trading, with the growth points of trade and services along Wonokromo Road corridor.

As stated above, the site is located at Jl Joyoboyo, which is supposed to be public facility. While the

site is surrounded by commercial buildings, there are also housing area but located a bit far from the site proposed. The area around site used to be for housing, but now it is planned to be trading and commercial service area. There is not much open space other than the zoo since the road around site is already full with buildings. Later, the site will be more crowded since it is planned to be main artery road.



Figure 16 Land Planning

(Source: C-map)

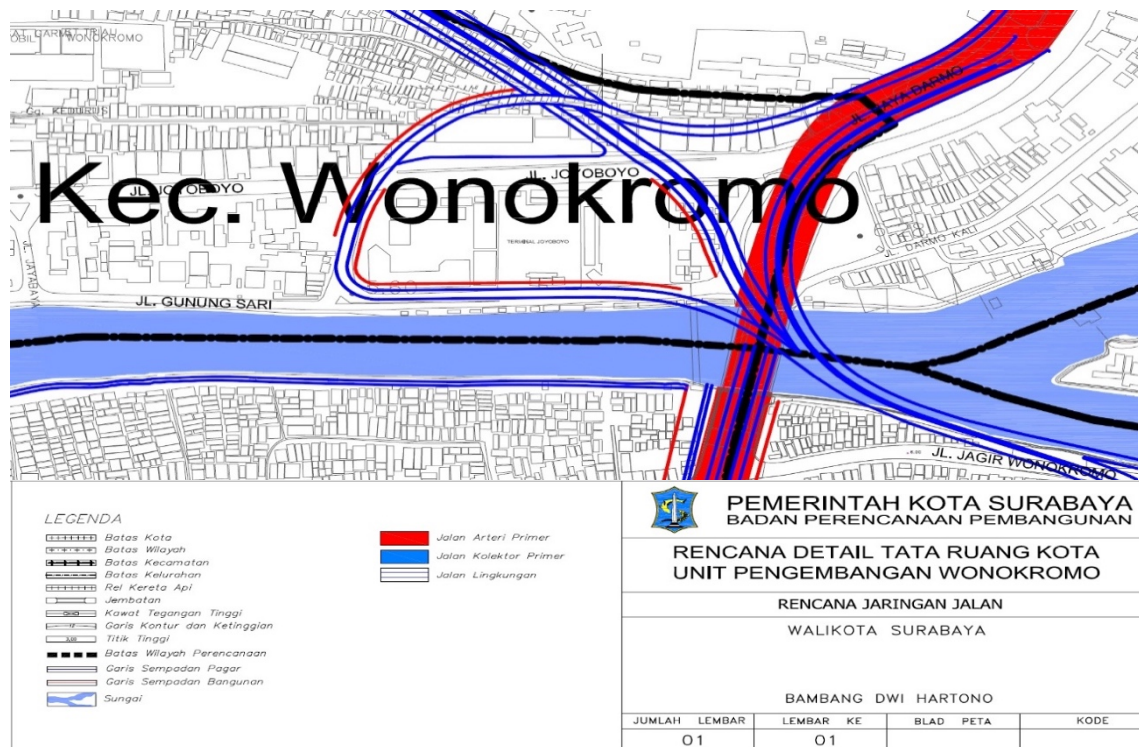











Figure 17 Street Development

(Source: C-map)

SITE ORIENTATION	NEARBY BUILDING	DOCUMENTATION	SIDE EFFECT	SOLUTION
North	1. Small kiosk 2. Surabaya Zoo	   	<ul style="list-style-type: none"> - The area is tend to be seen as slum - People around the area tend to park according to their own needs, less considerate towards others - The infrastructure is already prepared, as we can see in the pedestrian way, sadly there is not much people walking around - Some people see the pedestrian way as their 'rest area' - Affect the view and spatial arrangement of the proposed building 	<ul style="list-style-type: none"> - To give a higher degree of enclosure towards the slum - Arrangement of parking space tentatively / different parking location for public transportation and private - Plaza provided on the ground level so that people will be encourage to walk around
East	3. Sub-district Commands 4. Department of Transportation	   	<ul style="list-style-type: none"> - Indirectly affect the image of the building - The building is high enough to shadow the nearby buildings - The building is one big mass not a group of mass, which affect ventilation, view, and sun shading - Affect the view and spatial arrangement of the proposed building 	<ul style="list-style-type: none"> - Consideration towards the image of police station - Mass arrangement will be suited in accordance to the existing building
South	5. Wonokromo River		<ul style="list-style-type: none"> - The area is considered dirty, so it will affect the view directly and affect the 	<ul style="list-style-type: none"> - Higher ground level so that people will see 'above the ground', thus




			<p>image of the building indirectly</p> <ul style="list-style-type: none"> - Affect the view and spatial arrangement of the proposed building 	<p>people will pay less attention to the dirty side of the river rather than they have same level as the ground</p>
West	6. St. Yosef elementary and junior high school	 	<ul style="list-style-type: none"> - There will be peak hours as the student come and go from/to school - Traffic level will be increased during the peak hours - Affect the circulation in the proposed building 	<ul style="list-style-type: none"> - The site will be designed easily accessibled from several points, so that it will not accumulate at one point only

Figure 18 Site Description

CHAPTER III DESIGN APPROACH & METHOD

III.1 Design Approach

Unvolumetric Architecture talks about how a person perceives a space. Basically, Unvolumetric Architecture is trying to accommodate several activities in the same space without changing the 'main structure' of the space itself. The objective is to obtain the widest space to accommodate various activities

There are 10 points of unvolumetric architecture:



Figure 19 Unvolumetric

(Source: Contemporary Public Space: Aldo Aymonino)

III.2 Design Method

The building will accommodate several functions with the terminal and/or station as the main function. There will be some several supporting functions as the building is planned to support the transit oriented development planning and also to be the hub representing the district.

Based on the unvolumetric architecture, *one of the points is exploring*

spatial characteristics based on the location, to define functions accommodated at site and the nearby buildings and also the subjects. After we define the subjects, we can assume their economy level to consider about what functions we should accommodate in the building.

Analysis of nearby area

SITE

LOCATION	EXISTING FUNCTION	SUBJECT
Existing Nearby	Commuting Zoo School Kalimas Kiosk	Commuters Tourists Students - Trader

ACTIVITY ANALYSIS - ACCOMMODATED FUNCTION

SUBJECT	ECONOMY	FUNCTION
Commuters Tourists Students Traders	middle low - middle - middle - middle high middle low - middle	Commuting Gallery Playground Retail

Figure 20 Analysis of Nearby Area

Activity analysis

One of the next things to do is analyze the terminal users and their movement to decide on the circulation. There are two terminal users, the person (commuters, traders, visitors and management) and the vehicle (tourism bus, feeder, trunk, private car, motor and bike).

Analysis to define what passenger does when they are inside the terminal.

- a. Passenger comes to the terminal - going to the departure platform – waiting before departure – depart to their destination.
- b. Transit

Dropped off – waiting – depart

c. Arrival

Dropped off – passenger going to another transportation modes or to their private vehicle – depart

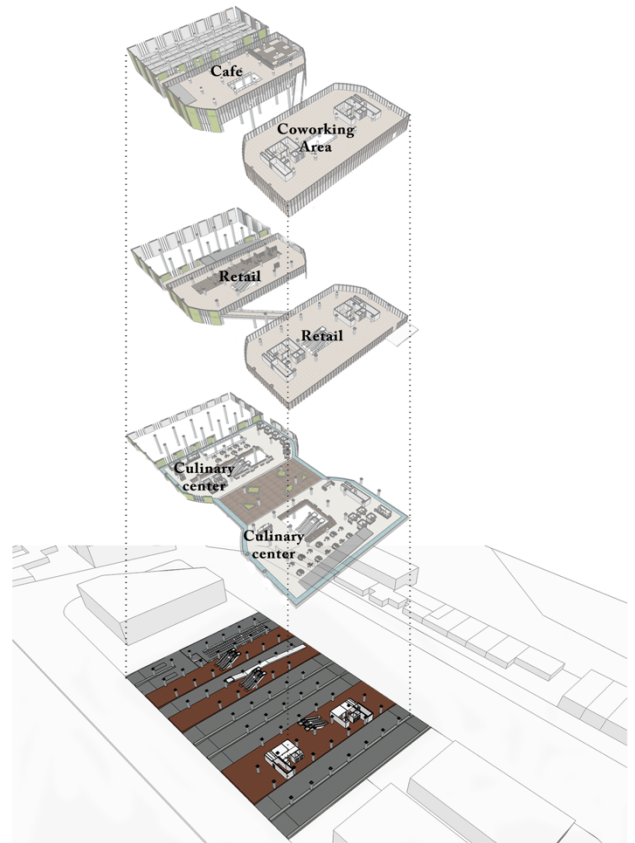


Figure 21 Axonometry

(Source:Self Analysis)

Programming

Programs arrangements are based on observation on users' economy level to suit people around the site, the higher the level, the more exclusive it will be. Flexibility is conceived as the creation of generic floors. Programs are not separated, rooms or individual space also not given unique characters.

CHAPTER IV DESIGN CONCEPT

IV.1 Formal Exploration



Figure 22 Site Planning

(Source:Pemkot)

The hub acts as linkage & meeting point between the nearby area, tram station and the intermodal transportation inside to increase connectivity between the districts.

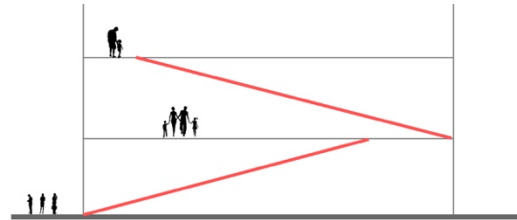
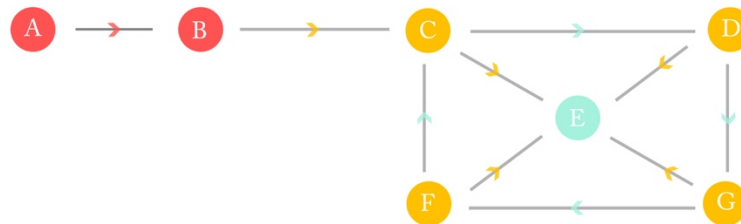


Figure 23 Idea Exploration

(Source:Self Analysis)

On the outer side of the building there is outdoor ramps to offer different way to circulate around the building and to strengthen the concept itself, as the ramps are interconnected through the building with one and another.



Terminal identic with people moving (travelling) from a point to another (destination), which the possibilities of the origin and the destination are endless. The movement itself is considered dynamic and interconnected.

Hence, the concept is *interconnected*.

INTERCONNECTED

- Continuity
- Linkage
- Movement

Figure 24 Main Concept

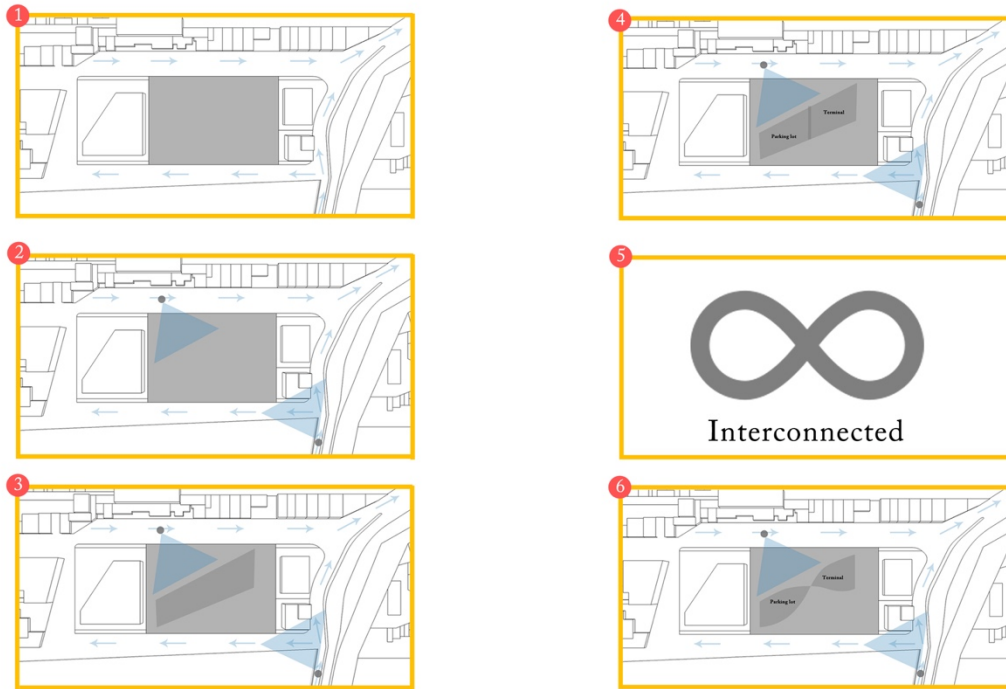


Figure 25 Shape & Form Idea

1. Traffic circulation
2. Affects point of view people nearby, *how people see the building* (direction)
3. Optimum space taken from point of view
4. Mass divided into two, because according to the plan, there are 2 main functions of the building; intermodal terminal and parking lot
5. Interconnected seen as infinity shape
6. Adaptation to the building

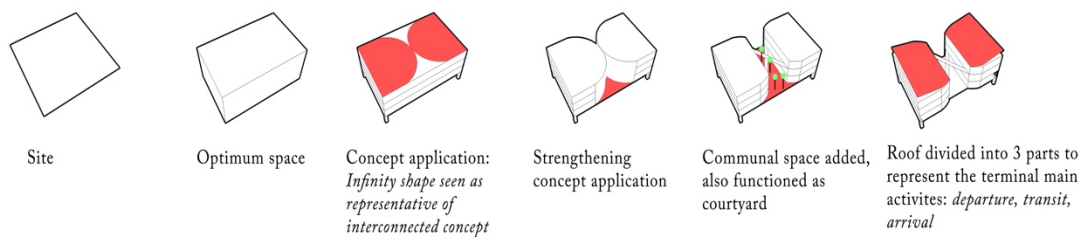


Figure 26 Shape & Form Concept

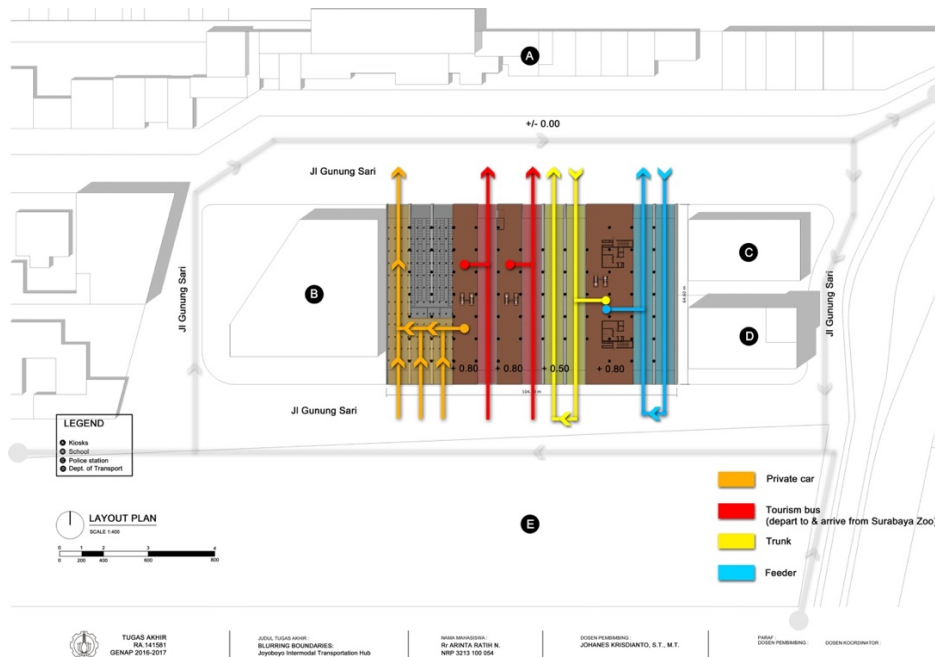
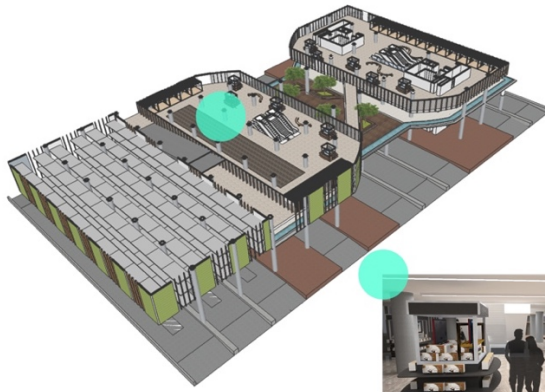


Figure 27 Vehicle Direction



Figure 28 Interior Concept



THIRD FLOOR PLAN



Time : 08.00 - 16.00
 Activities : Strolling around
 Sight-seeing
 Shopping
 Subject : local communities
 employee
 tourist
 Property : kiosk
 booth
 Boundary : kiosk
 booth
 Theory : Proxemics Theory - Social Space (3.6m)



Time : Occasional
 Activities : Exhibition
 Bazaar
 Workshop
 Subject : local communities
 tourist
 Property : booth bazaar
 Boundary : booth bazaar
 Theory : Proxemics Theory - Social Space (3.6m)



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Figure 29 Interior Concept (2)

CHAPTER V DESIGN

V.1 Formal Exploration

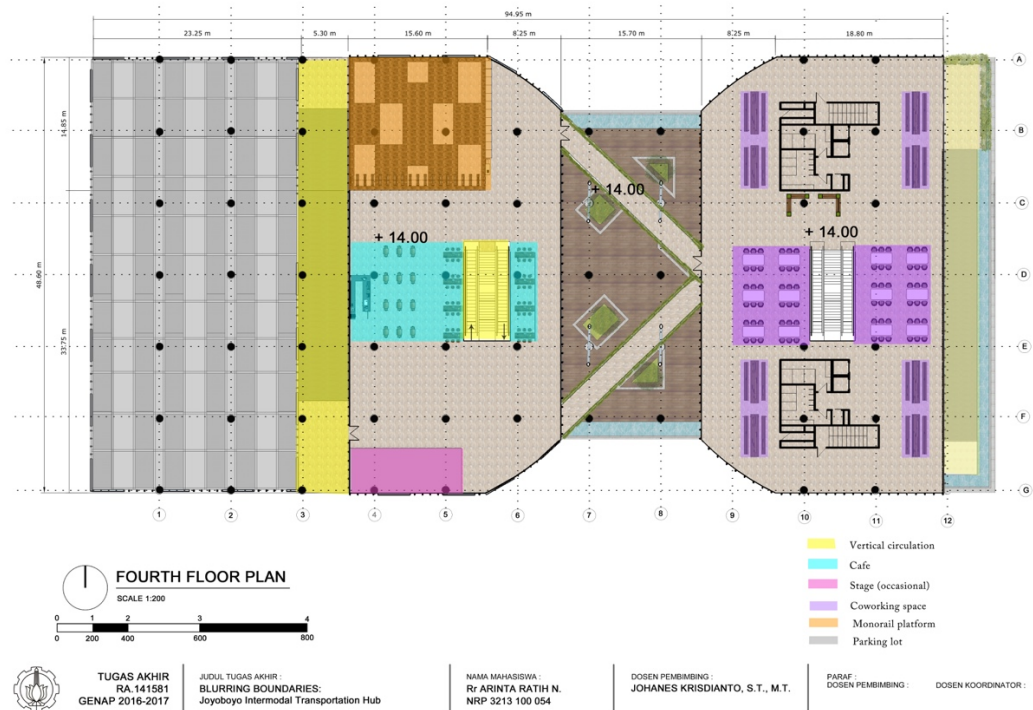


Figure 30 Fourth Floor Plan

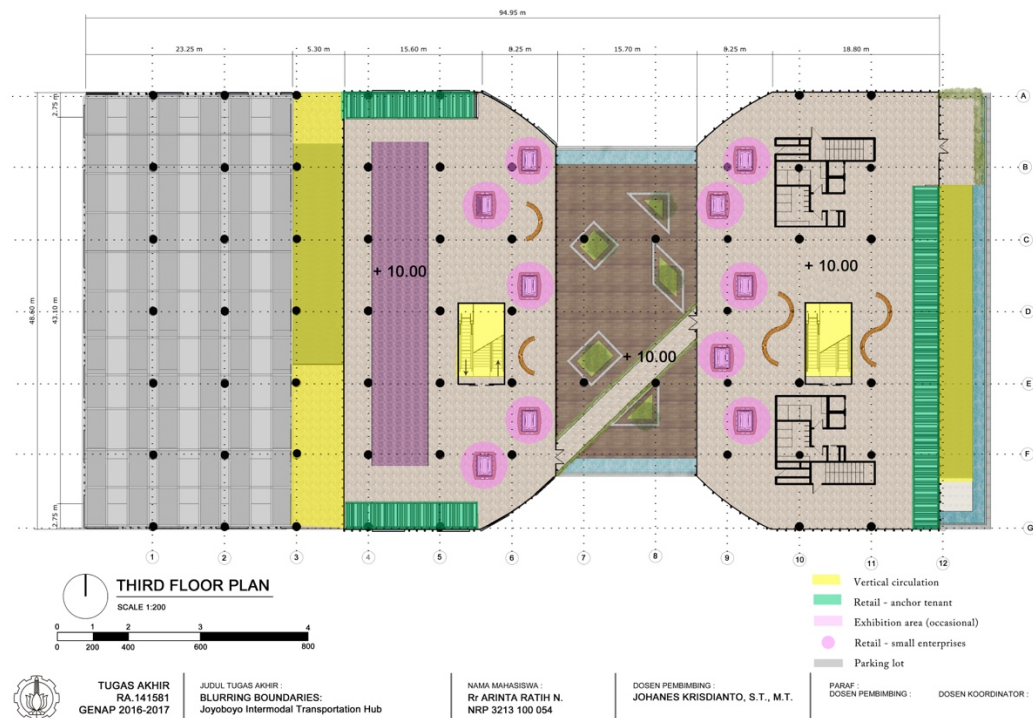


Figure 31 Third Floor Plan

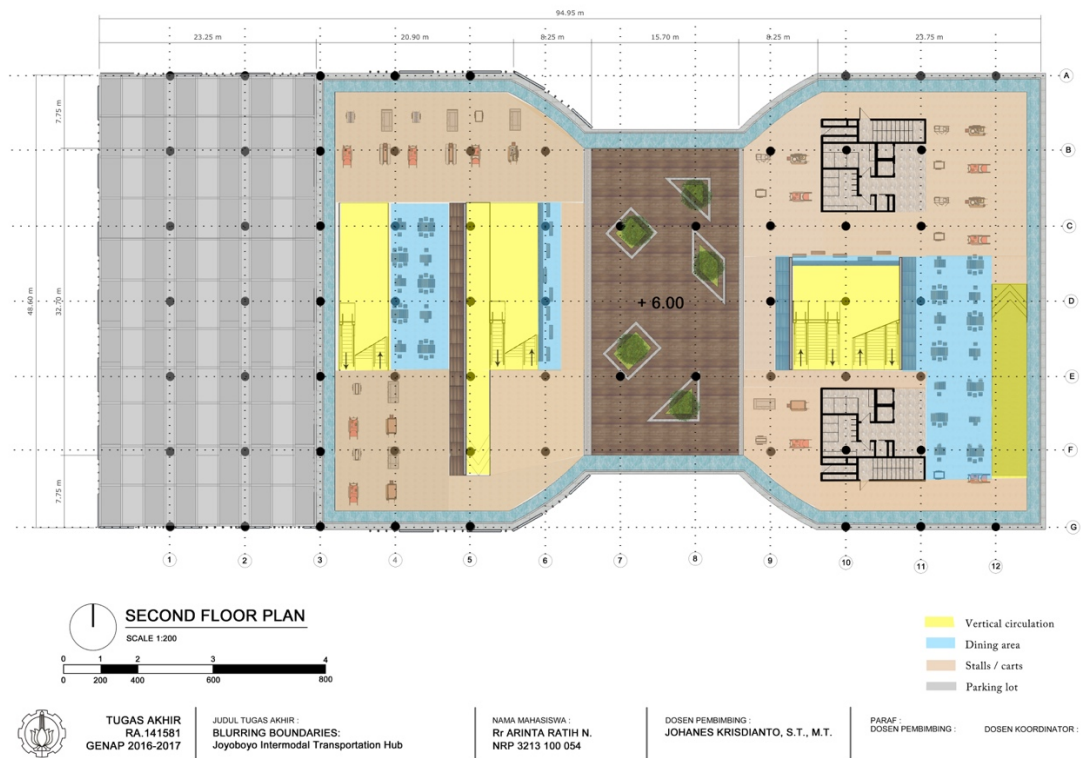


Figure 32 Second Floor Plan



Figure 33 Perspective Interior (1)



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Figure 34 Perspective Interior (2)



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DOSEN PEMBIMBING:
JOHANNES KRISDIANTO, S.T., M.T.

PARAF:
DOSEN PEMBIMBING: DOSEN KOORDINATOR:

Figure 35 Perspective Interior (3)

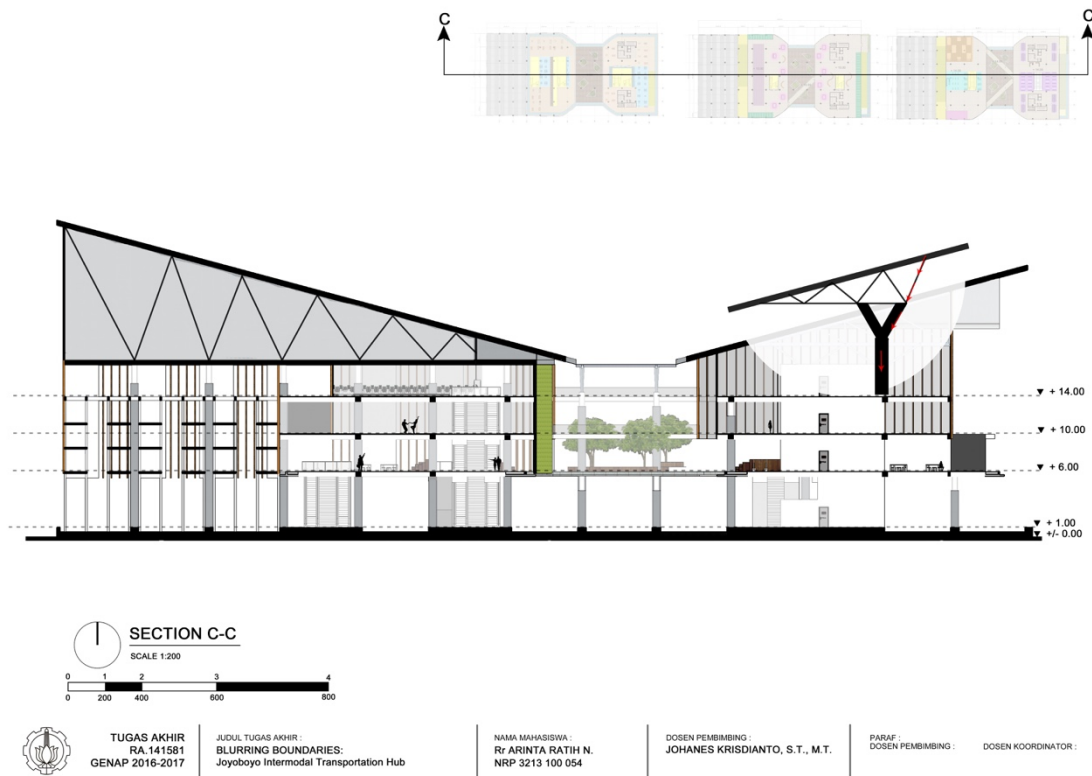
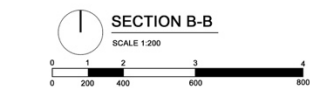


Figure 36 Section (1)



Figure 37 Section (2)



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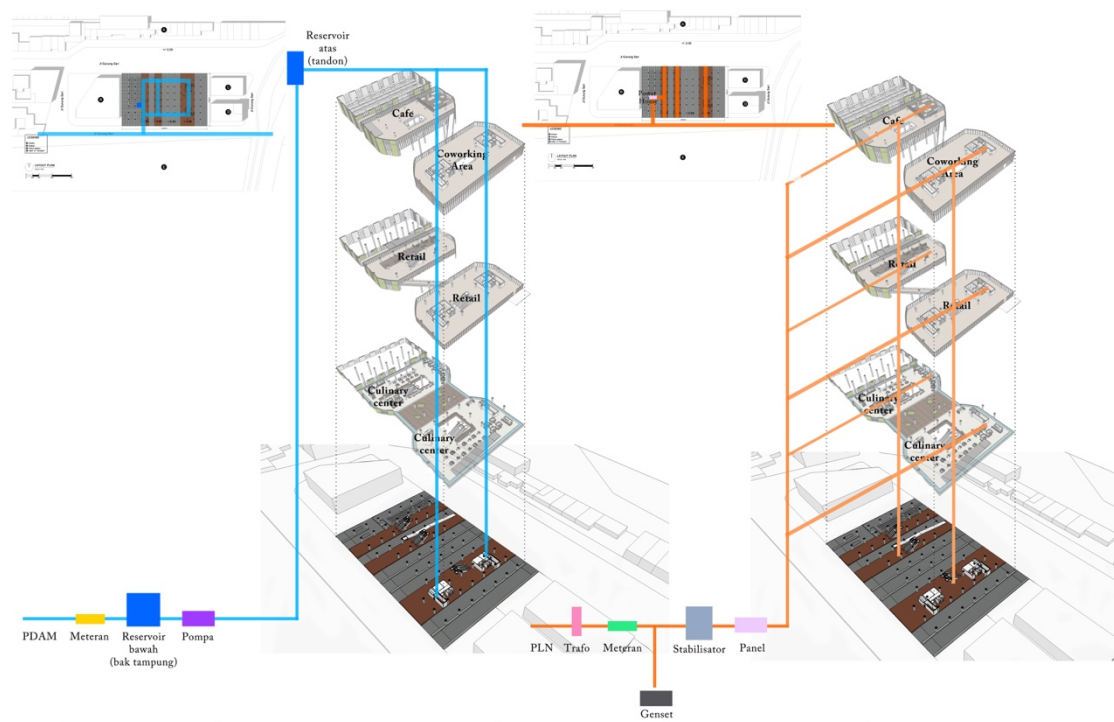
NAMA MAHASISWA :
Rr ARINTA RATIH N.
NRP 3213 100 054

DOSEN PEMBIMBING :
JOHANES KRISDIANTO, S.T., M.T.

PARAF :
DOSEN PEMBIMBING :
DOSEN KOORDINATOR :

Figure 38 (Section 3)

V.2 Technical Exploration



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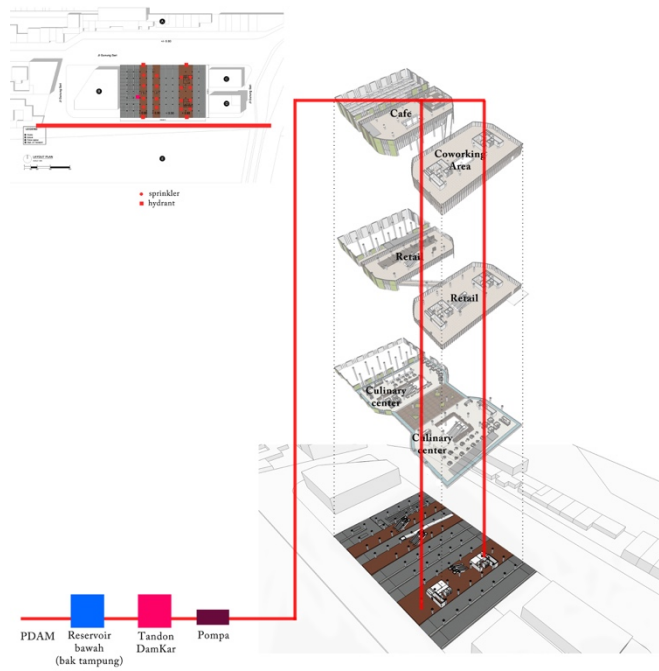
JUDUL TUGAS AKHIR :
BLURRING BOUNDARIES:
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NAMA MAHASISWA :
Rr ARINTA RATIH N.
NRP 3213 100 054

DOSEN PEMBIMBING :
JOHANES KRISDIANTO, S.T., M.T.

PARAF :
DOSEN PEMBIMBING :
DOSEN KOORDINATOR :

Figure 39 Technical Exploration (1)



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BLURRING BOUNDARIES:
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Rr ARINTA RATH N.
NRP 3213 100 054

DOSEN PEMBIMBING :
JOHANES KRISDIANTO, S.T., M.T.

PARAF :
DOSEN PEMBIMBING : DOSEN KOORDINATOR :

Figure 40 Technical Exploration (2)

CHAPTER VI

CONCLUSION

Boundaries are strongly related to how people perceive the space. On a public space, people need to feel that their privacy is safe without strong physical boundaries. They also need to be able to track their destination easily. The boundaries still exist in the design but with minimized effect; different material, different ambience, different function, etc. Another objective of the design is also to blur the 'boundaries' between the district, as the hub is expected to be main attraction, where people can do their activities comfortably without disturbing the passenger.

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