

1.4 Functional Approach

A. The facilities _____

Library

- | | |
|--------------------------------|------------------------------------|
| 1. Entry atrium | 24. Staff office |
| 2. Exhibition space | 25. Musholla |
| 3. Help desk | • Gathering Hall |
| 4. Information Center | 1. Community gathering |
| 5. Indoor Reading room | 2. Science conference |
| 6. Outdoor Reading room | 3. Seminar |
| 7. Digital collection room | 4. Book launching |
| 8. Carrels ² | • Book Store & stationery |
| 9. Kids reading room | • Fun learning zone for kids |
| 10. Locker room | • Lounge |
| 11. Copy & scan booth | 1. Coffee shop |
| 12. Open stacks area | 2. Food court |
| 13. Journal reading room | 3. Commercial Retail space |
| 14. Reference center | • Plaza |
| 15. Loan division | 1. Sitting group |
| 16. Free internet access | 2. Public Locker deck ³ |
| 17. Gallery & display area | 3. Water conservation pool |
| 18. Multi Media room | 4. Play ground |
| 19. Multipurpose room | 5. Event gathering |
| 20. Kitchenette & catering bar | • Water Treatment room |
| 21. Book sorting staff area | • Control panel & genset room |
| 22. Staff lunch room | • Atm center |
| 23. Staff meeting area | • Parking area |

²Individual study room where serious workers need to be undisturbed and require the uninterrupted use of book for certain period

³A group of subscribed locker that can be used for visitors to keep their little note/messages to other visitor , the deck which can be a reading & wi-fi area

3.1.1 User& Activity Study

The building user of this project consist of the intern such as librarian, officer and staff of the library itself and commercial retail owner with their staff and visitor which come from many background.

The User of Public Library can be classified as 3 major user:

1. Social (People in common); Adults (Elder & Mid-age adult), Teens, Children, Difables⁴
People of Semarang, local tourist and international tourist/guest
2. Librarian, book lover and education expert
3. Academic people (Student, teacher, lecture)

Here below the study of the user with their background and classification.

a. Librarian

- People who came from library/manuscript department and has library education background
- Main duty is to analyze and sort the literals manuscript in order to build a competent system of the library
- Main activity of the librarian is doing a book sorting and manage all the requirement of general library

b. Staff

- People who come from certain level of education that support their work
- Placed in front line of library from the entry gate, help desk and report activity

c. Foundation Officer (administration and building operational concern)

- The owner of foundation as the supervisor of operational and managerial building
- Managing the business of commercial retail space surrounding the library
- Determine the needs of library to keep it performing a good library experience, such as displaying an art gallery or educational event

⁴ Difable : Different Ability Person (wheel-chaired and other disability)

d. Visitors

- Semarang citizens are the main target of this project, people who live in Semarang region whether in suburban or urban or even outside of Semarang
- People who love to read and interest of journalistic benefits
- People who want to enjoy a library experience in a different atmosphere
- Student group (academic touring)

e. Security& Safety

- Cleaning Service
Responsible in keep the library area hygiene and well-maintained
- ME worker
Concerning in all electricity and other mechanical issue
- Security guard
Keeping up the secure condition on library and its surroundings

Space requirement approach

The Urban Library Plaza will have major facilities such as library hall, gathering hall, entertainment lounge and plaza. These 4 facilities will be classified by the activities that occur in it. These following table will explain the detail of space needs:

Library Hall Facilities

Tb 3.1 Activity Study of Library Hall

User	Activity	Facility
Visitor	Enter the library	Entry Gate
		Hall
	Reading book (kids-teen)	Help desk
		Registration desk
		Locker room
		Reading spot
		Carrels
		Lounge
		Book store
		Plaza
		Adults reading room
		Internet room
	Reading book (adults only)	Lounge
		Multimedia room
	Internet browsing	Loan Division
Copy & scan booth		
Borrowing book	Plaza	
	Gathering hall	
Gathering	Multimedia room	
	Plaza	
Lesson/course	Multi-purpose room	
	Youth area	
Sight-seeing	Plaza	
	Lounge/ Gallery/display	
Lunch break	Kitchenette & catering bar	
	Café	
Disposal	Lavatory/urinary	
	Musholla	
Praying	Loan division	
	Registration desk	
Leave the library	Locker room	
	Parking area	
Staff	Enter the library	Exit gate
		Entry Gate
Working based on jobdesc.		Parking
		Hall
		Manager office
		Administration office
		Registry service
		Loan division
		Common service

SERVICE

	Book sorting, inputting	Creation Service
	technology device	Annotation Service
	Publishing weekly bulletin	Collection service
	E-library system concern	Repository service
	Notifying Inter-library system	
	Checking & noticing number of book exemplar	Gathering hall
	Meeting	Staff Multimedia room
		Kitchenette catering bar
	Lunch break/dinner	
	Praying	Musholla
		Lavatory/Urinary
	Disposal	
		Parking area
	Leave the library	Exit gate
Foundation Officer	Enter the library	Entry Gate
		Parking Hall
	Supervising/public relation	Head Office
		Staff area
	Meeting	Library Hall
		Gathering hall
	Lunch break	Staff Multimedia room
		Kitchenette & catering bar
	Praying	Musholla
	Disposal	Lavatory/ Urinary
	Leave the library	Parking area
Cleaning service & M.E technician	Enter the library	Exit gate
		Entry Gate
		Parking area
	Cleaning	Hall
		Locker room
	Lunch break /dinner	Entire part of library & plaza
		Kitchenette & catering bar
	Disposal	Lavatory & urinary
	Leave the library	Parking area
		Exit gate
Chef/ shopkeeper	Enter the library	Entry Gate
		Parking area
		Hall
		Locker room
	Cooking	Kitchenette & catering bar
	Lunch break /dinner	bar
		Cafe

	Disposal Leave the library	Lavatory & urinary Parking area Exit gate
Security guard	Enter the library Morning assembly Guarding Lunch break /dinner Disposal Leave the library	Entry Gate Parking area Hall Parking area In every division of library Plaza Security Post Kitchenette & catering bar/ Cafe Lavatory & urinary Parking area Exit gate

Tb 3.2 Activity Study of gathering hall

User	Activity	Facility	
Visitor	Enter the library	Entry Gate Hall Help desk Registration desk Locker room	
	Community Gathering	Gathering hall Multimedia room Multi-purpose room Youth area	
	Lesson/course Book review Movie review	Multi-purpose room Gathering Hall Gathering hall Multimedia room	
	Lunch break	Lounge/ Hall of the fame Kitchenette & catering bar	
	Disposal Praying Leave the library	Café Lavatory/urinary Musholla Parking area Exit gate	
	Staff	Enter the library	Entry Gate Parking Hall
		Checking the proposal paper of venue lease	Manager office Administration office

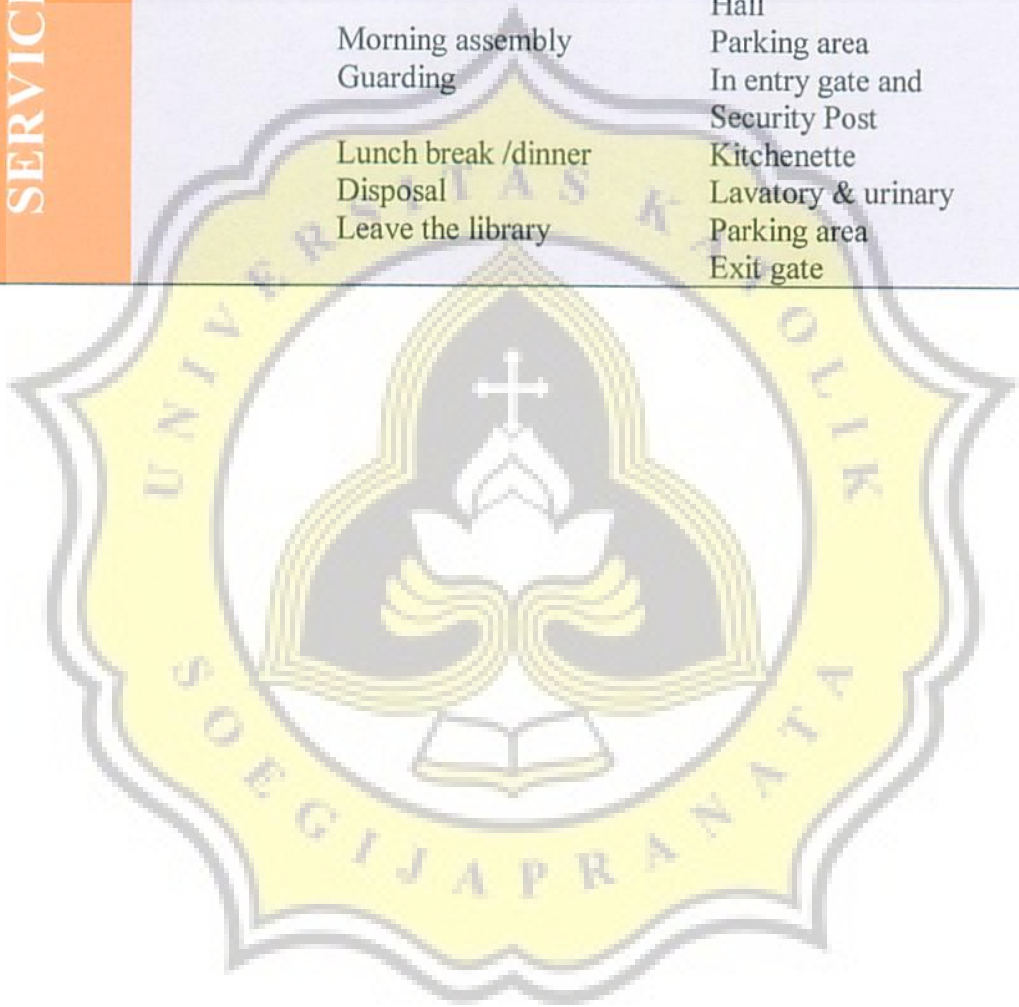
	Meeting	Bussiness service Gathering hall Staff Multimedia room
	Lunch break/dinner Praying Disposal	Kitchenette bar MushollaLavatory/ Urinary
	Leave the library	Parking area Exit gate
Cleaning service & M.E technician	Enter the library	Entry Gate Parking area Hall
	Cleaning	Locker room Entire part of gathering hall
	Lunch break /dinner Disposal Leave the library	Kitchenette bar Lavatory & urinary Parking area Exit gate
Security guard	Enter the library	Entry Gate Parking area Hall
	Morning assembly Guarding	Parking area In every division of library Plaza
	Lunch break /dinner Disposal Leave the library	Security Post Kitchenette bar Lavatory & urinary Parking area Exit gate

Tb.3.3 Activity Study of Entertainment Lounge

User	Activity	Facility	
Visitor	Enter the entertainment lounge	Entry Gate Hall Help desk Registration desk Locker room Café	
	Lunch break	Food court Lounge/ Plaza	
	Visiting Bazaar/exhibition	Book store & stationery	
	Buying book	Lounge/ Hall of the fame	
	Sight-seeing	Kids zone	
	Book review		
	Movie review		
	Disposal	Urinary/Lavatory	
	Praying	Musholla	
	Leave the library	Parking area Exit gate	
	Staff	Enter the lounge	Entry Gate Parking Hall
		Checking the proposal paper of venue lease	Manager office Administration office Business service
		Meeting	Gathering hall Staff Multimedia room
Lunch break/dinner		Kitchenette	
Praying		Musholla	
Disposal		Lavatory/ Urinary	
Leave the library		Parking area Exit gate	
Chef/ shopkeeper		Enter the lounge	Entry Gate Parking area Lounge Locker room
		Cooking	Cooking kitchen
		Preparing food & beverage	Kitchenette
	Loading/ unloading the goods	Storage room Parking area	
	Lunch break /dinner	Kitchenette	
	Disposal	Lavatory & urinary	
	Leave the library	Parking area Exit gate	
	Cleaning service &	Enter the library	Entry Gate Parking area

SERVICE

M.E technician	Cleaning	Hall Locker room Entire part of gathering hall
	Lunch break /dinner	Kitchenette
	Disposal	Lavatory & urinary
	Leave the library	Parking area Exit gate
Security guard	Enter the library	Entry Gate Parking area Hall
	Morning assembly	Parking area
	Guarding	In entry gate and Security Post
	Lunch break /dinner	Kitchenette
	Disposal	Lavatory & urinary
	Leave the library	Parking area Exit gate



Tb.3.4 Activity Study of Plaza

User	Activity	Facility
Visitor	Enter the plaza	Entry Gate Hall Help desk Locker room
	Lunch break	Café /Food court
	Visiting Bazaar/exhibition	Plaza
	Sight-seeing	
	Jogging/walking	Walking track
	Chatting/little forum chat	Sitting group
	Reading	Loan Division Public locker deck
	Disposal	Urinary/Lavatory
	Praying	Musholla
	Leave the plaza	Parking area Exit gate
Staff	Enter the plaza	Parking Hall
	Checking the proposal paper of venue lease	Manager office Administration office Business service
	Lunch break/dinner	Kitchenette
	Praying	Musholla
	Disposal	Lavatory/ Urinary
	Leave the plaza	Parking area Exit gate
	Cleaning service (gardener)	Enter the library
Cleaning		Entire part of plaza
Lunch break /dinner		Kitchenette
Disposal		Lavatory & urinary
Leave the plaza		Parking area Exit gate
Security guard	Enter the library	Parking area Hall
	Morning assembly	Parking area
	Guarding	In entry gate and Security Post
	Lunch break /dinner	Kitchenette
	Disposal	Lavatory & urinary
	Leave the plaza	Parking area Exit gate

Tb.3.5 Facility study

Facilities	Public	Semi	Private	Service
Library				
1. Entry atrium	•			
2. Exhibition space	•			
3. Help desk for elderly	•			•
4. Information Center	•			•
5. Indoor Reading room		•		
6. Outdoor Reading room	•			
7. Carrels			•	
8. Kids' reading room		•		
9. Locker room		•		•
10. Open stacks area	•			
11. Copy & scan booth	•			
12. Journal reading room		•		
13. Reference center		•		
14. Loan division	•			
15. Free internet access	•			
16. Seating and display area	•			
17. Flexible Multipurpose room		•		
18. Kitchenette and catering bar	•			
19. Book sorting area		•		
20. Staff lunch room		•	•	
21. Staff meeting area		•		
22. Staff office		•		
23. Musholla	•			
• Gathering Hall			•	
1. Community gathering		•	•	
2. Science conference	•	•		
3. Seminar		•		
4. Book launching	•			

• Book Store & stationery	•	•		
• Fun learning zone for kids	•			
• Entertainment Lounge	•			
1. Coffee shop	•			
2. Casual Dining Restaurant	•			
3. Food court area	•			
4. Commercial Retail space	•			
Plaza				
1. Sitting group	•	•		
2. Public Locker deck	•	•		•
3. Water conservation pool	•	•		
4. Play ground	•			•
5. Event gathering	•			•
• Genset room	•			
• Water Treatment room	•			
• Control panel room				•
• Atm center	•			
• Parking area				
• Urinary / Lavatory	•			•
• Security pos	•			•
• Exit gate				•

Tb.3.6 Space Condition Requirement

Facilities	Space Requirement					
	Natural Air	Artificial air	Natural Lighting	Artificial Lighting	Indoor space	Outdoor Space
Library						
1. Entry atrium	•	•	•	•	•	
2. Exhibition space	•	•	•	•	•	•
3. Help desk for elderly	•	•	•	•		
4. Information Center	•	•	•	•		
5. Indoor Reading room		•	•	•		
6. Outdoor Reading room	•					
7. Carrels		•	•	•	•	
8. Kids reading room		•	•	•	•	
9. Locker room		•		•	•	
10. Open stacks area	•	•	•	•	•	
11. Copy & scan booth	•	•		•	•	
12. Journal reading room		•	•	•	•	
13. Reference center		•	•	•	•	
14. Loan division	•	•	•	•	•	
15. Free internet access		•	•	•		
16. Seating and display area		•	•	•		
17. Flexible Multipurpose room		•		•	•	
18. Kitchenette and catering bar			•	•		
19. Book sorting area		•		•	•	
20. Staff meeting area		•		•	•	
21. Staff office		•		•	•	
22. Musholla			•		•	
	•	•		•	•	

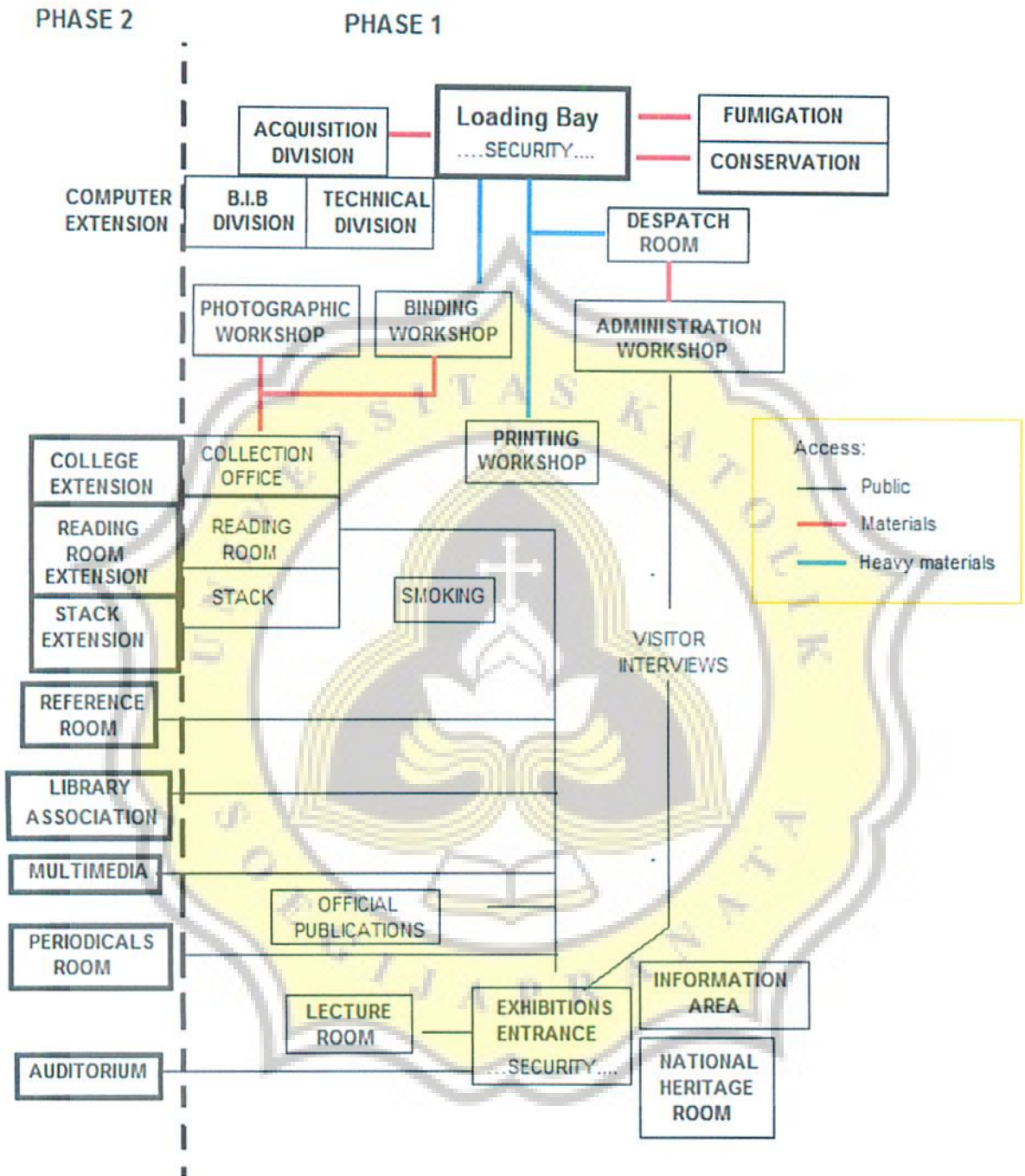
• Gathering Hall		•		•	•	
• Book Store & stationery	•	•	•	•	•	
• Fun learning zone for kids	•	•	•	•	•	
• Entertainment Lounge	•	•		•	•	
1. Coffee shop	•	•		•	•	•
2. Casual Dining Restaurant	•		•		•	
3. Food court area		•	•		•	•
4. Commercial Retail space			•	•		•
Plaza						
1. Sitting group	•	•	•	•	•	•
2. Public Locker deck	•		•			•
3. Water conservation pool	•		•	•		•
4. Play ground	•			•		•
5. Event gathering	•			•		•
• Genset room	•				•	
• Water Treatment room						•
• Control panel room	•			•		
• Atm center				•	•	•
• Parking area	•		•			•
• Urinary / Lavatory	•					•
• Security pos						•
• Exit gate						•

Tb.3.7 Spatial Requirement

Facilities	Space Requirement					
	High Movement	Medium	Low	Comfortable	Spatial	Low disturbance
Library						
1. Entry atrium	•			•	•	
2. Exhibition space	•			•	•	
3. Help desk for elderly		•		•		
4. Information Center		•		•		
5. Indoor Reading room		•		•		•
6. Outdoor Reading room		•		•	•	
7. Carrels			•			•
8. Kids' reading room	•			•	•	
9. Locker room		•		•	•	
10. Open stacks area		•		•	•	
11. Copy & scan booth	•	•		•		
12. Journal reading room		•		•		•
13. Reference center		•		•		•
14. Loan division	•	•	•	•	•	•
15. Free internet access			•	•		•
16. Seating and display area		•		•	•	•
17. Flexible Multipurpose room		•		•	•	
18. Kitchenette and catering bar		•		•	•	
19. Book sorting area		•		•	•	
20. Staff meeting area		•		•	•	•
21. Staff office		•		•	•	
22. Musholla			•	•	•	•

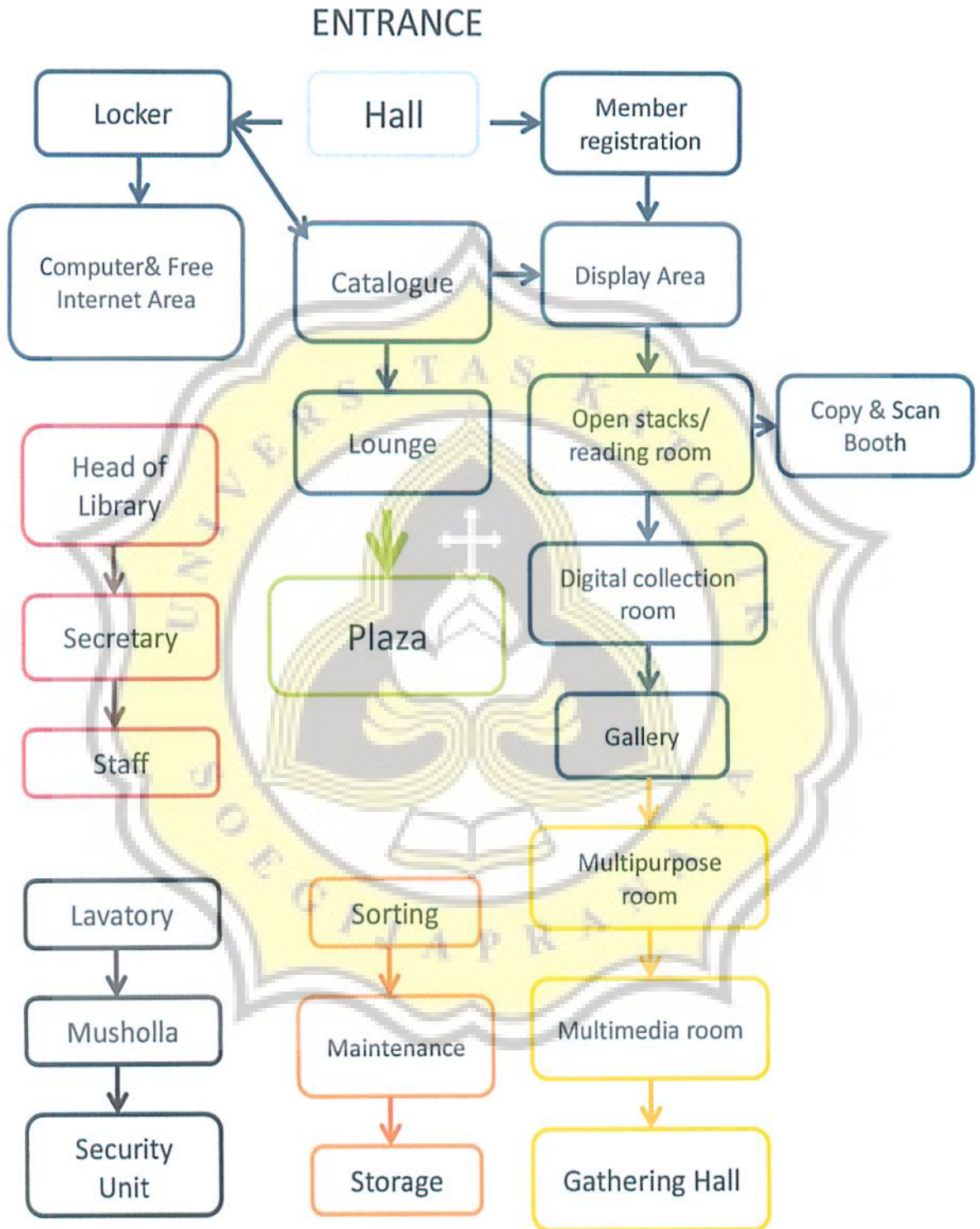
<ul style="list-style-type: none"> • Gathering Hall • Book Store & stationery • Fun learning zone for kids • Entertainment Lounge 	•			•	•	
<ol style="list-style-type: none"> 1. Coffee shop 2. Casual Dining Restaurant 3. Food court area 4. Commercial Retail space 	•	•		•	•	
Plaza						
<ol style="list-style-type: none"> 1. Sitting group 2. Public Locker deck 3. Play ground 5. Event gathering 	•	•		•	•	
<ul style="list-style-type: none"> • Atm center • Parking area • Urinary / Lavatory • Security pos • Exit gate 	•	•	•	•	•	•

Dia. 3.1. Library's Departmental Relationship



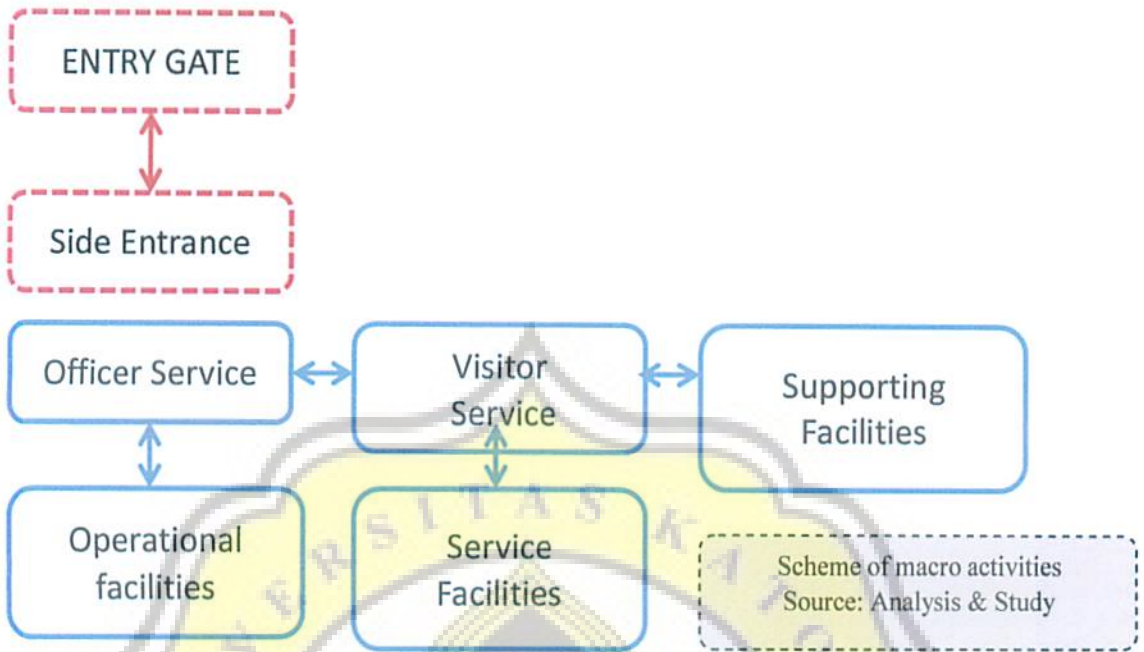
Library's Departmental Relationship
 Source: 3rd Ed Planning & Design of library building,
 Godfrey Thompson | 1989

Dia. 3.2.Activities in Library

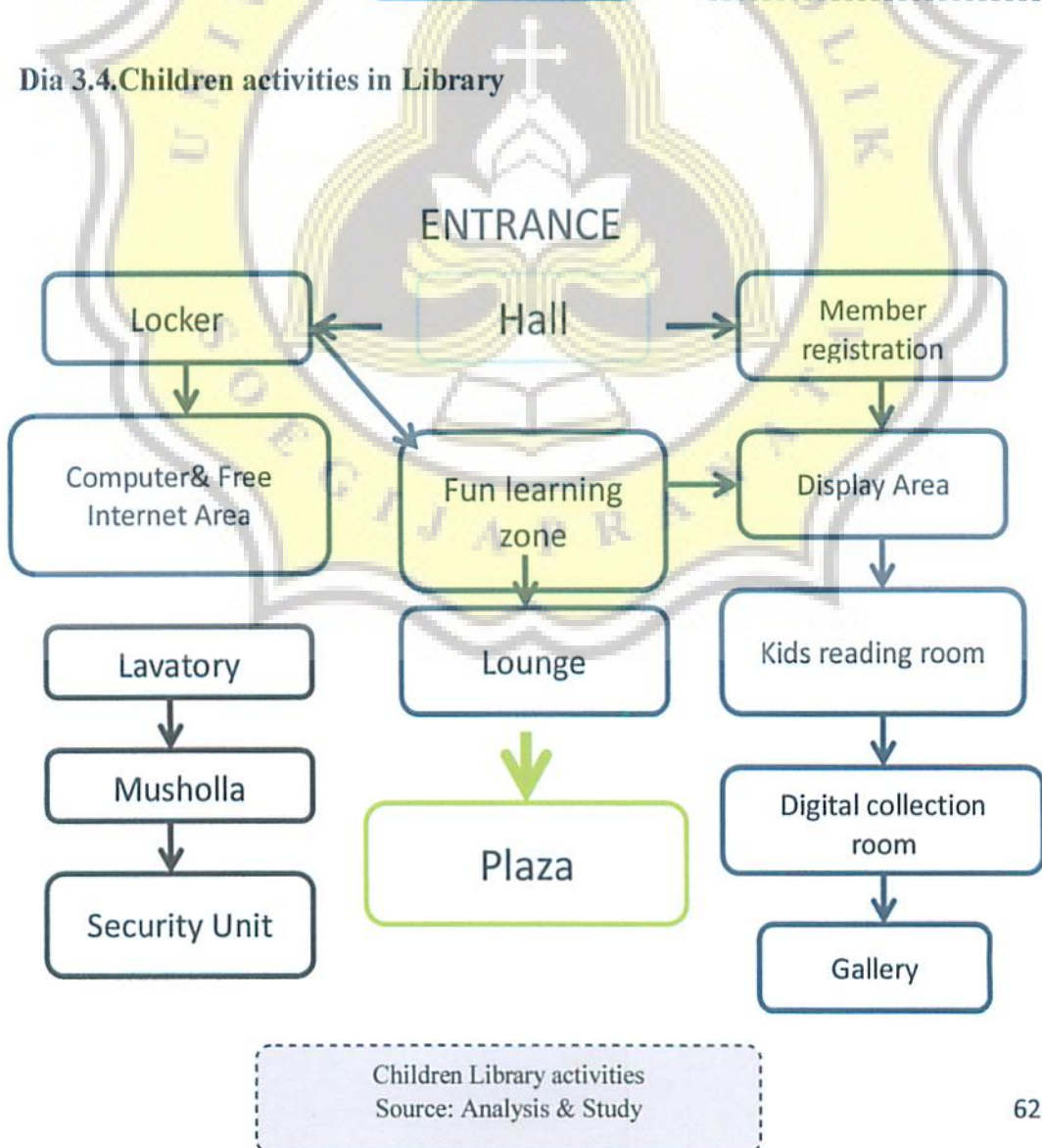


Library hall activities
Source: Analysis & Study

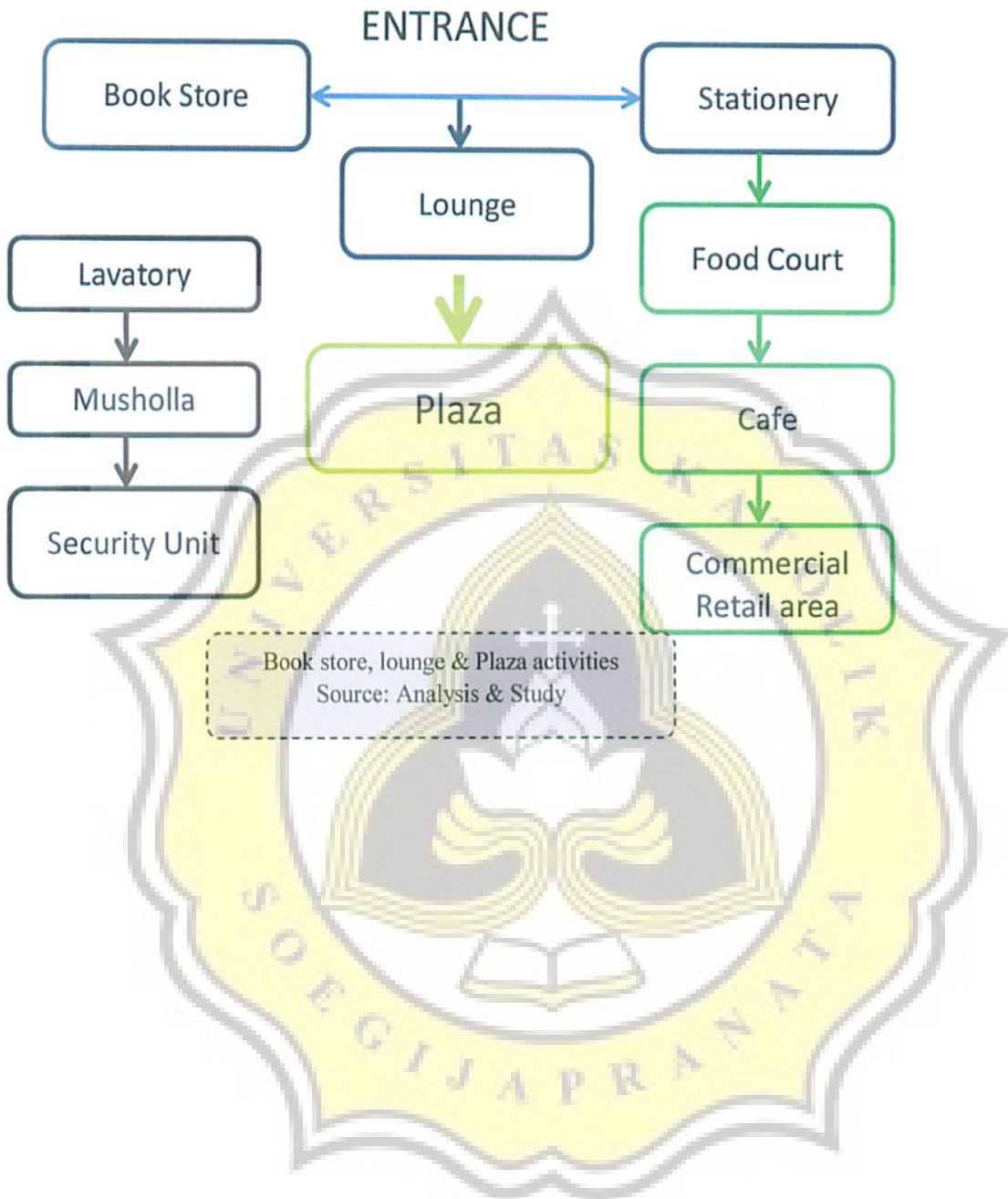
Dia 3.3. Activities in Library : Macro scheme



Dia 3.4. Children activities in Library

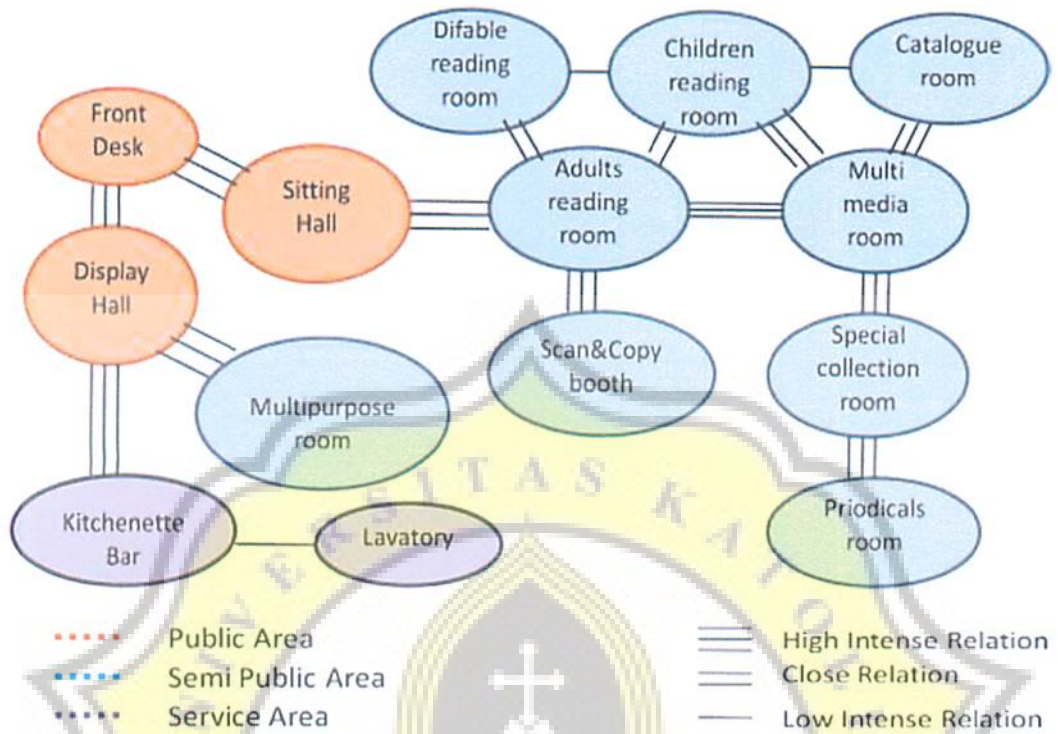


Dia 3.5.Lounge and Plaza activities

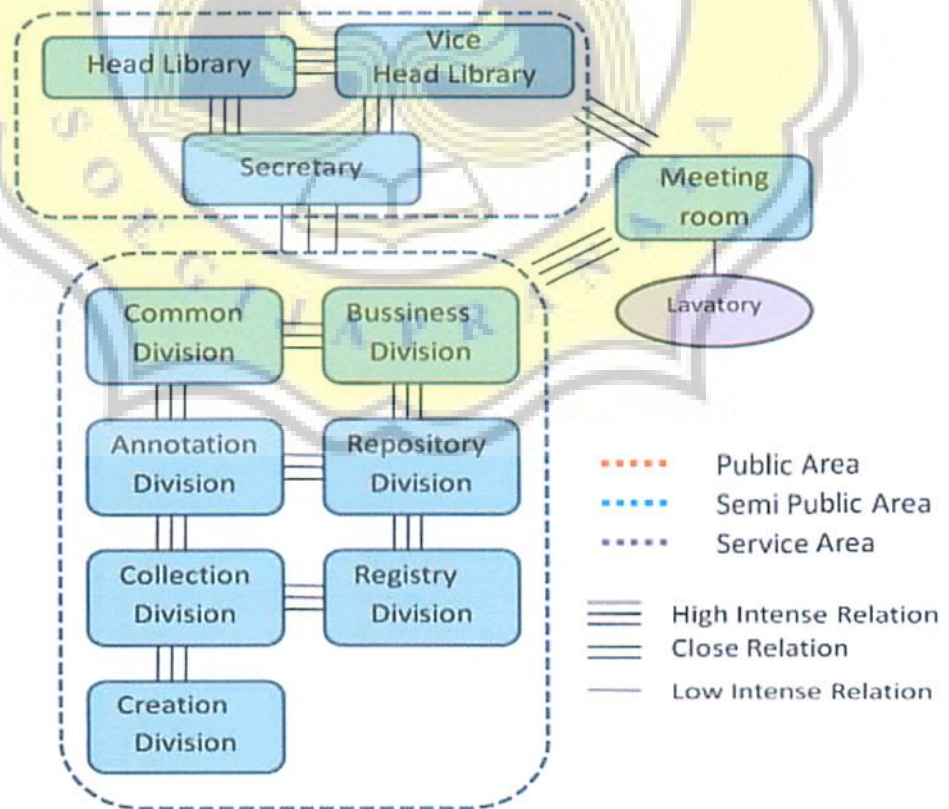


Space Organization Chart

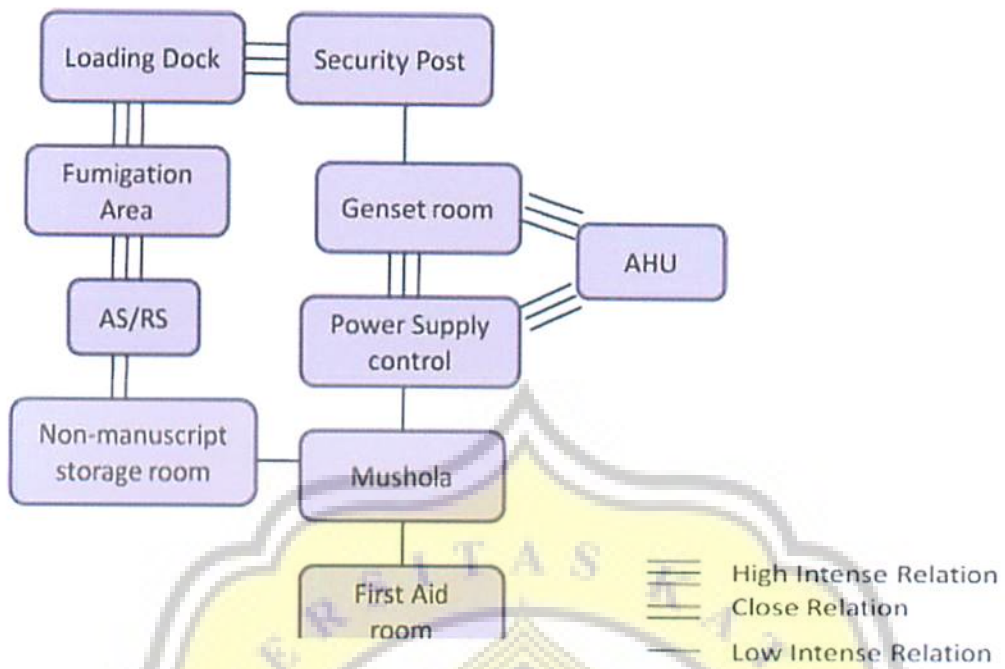
B. Library Hall



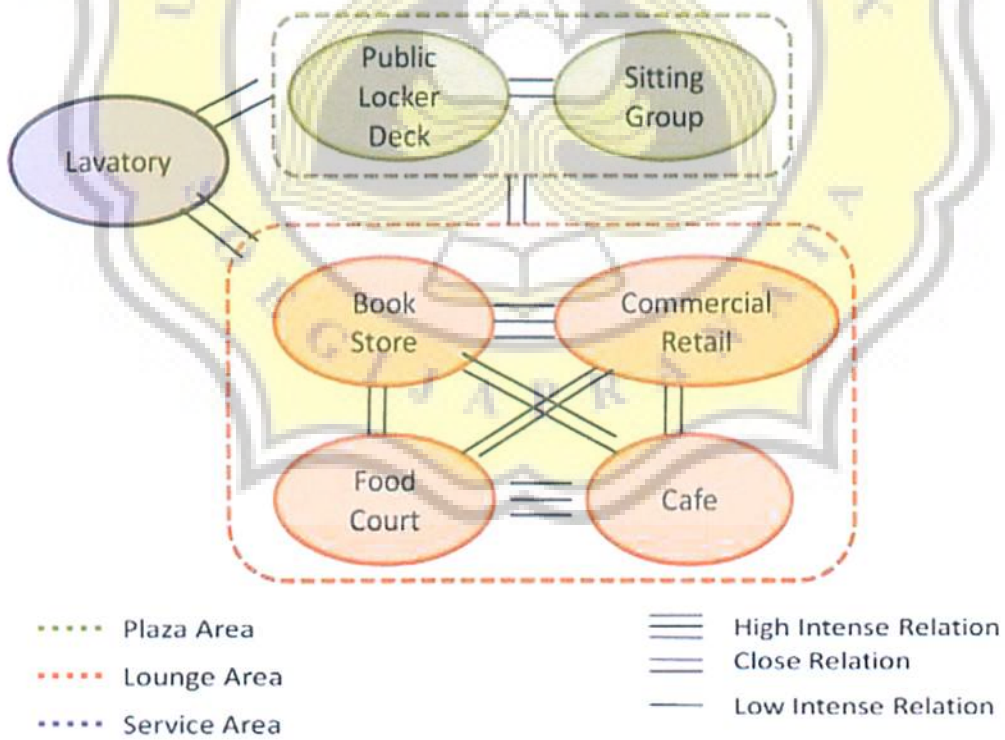
C. Library officer



D. Maintenance & Service division

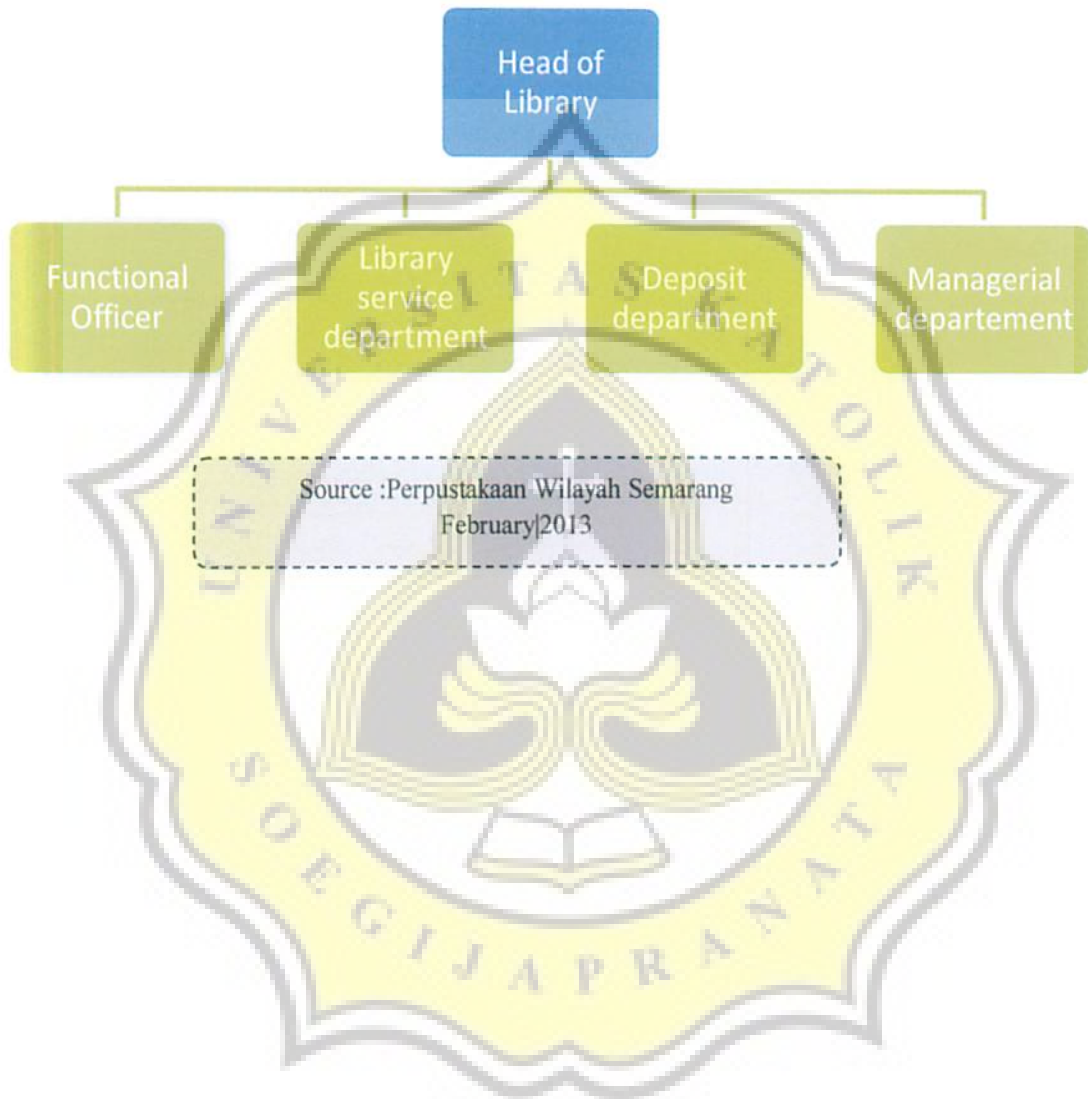


E. Lounge & Plaza



Dia 3.6. Library Organizational staff

According to Perpustakaan Wilayah Semarang, these are the structure of organizational staff:



- Head of Library

Head of Library hold an important role to supervising all the activities in public library. The chairman's main duty is working on operational service and supportive activities and fulfills as follow functions:

- Arranging library's operational service and deposit.
- Attempting Operational policy and deposit
- Monitoring, evaluating and reporting library and deposit service.
- Managerial department

A group of peoplereponsible in administration, financial and logging issues.

- Library service department

Technically concern in preparing the library services

- Deposit department
- Preparing the deposit of library service
- Functional officer

A group of services which concerning from the administration desk to front desk.

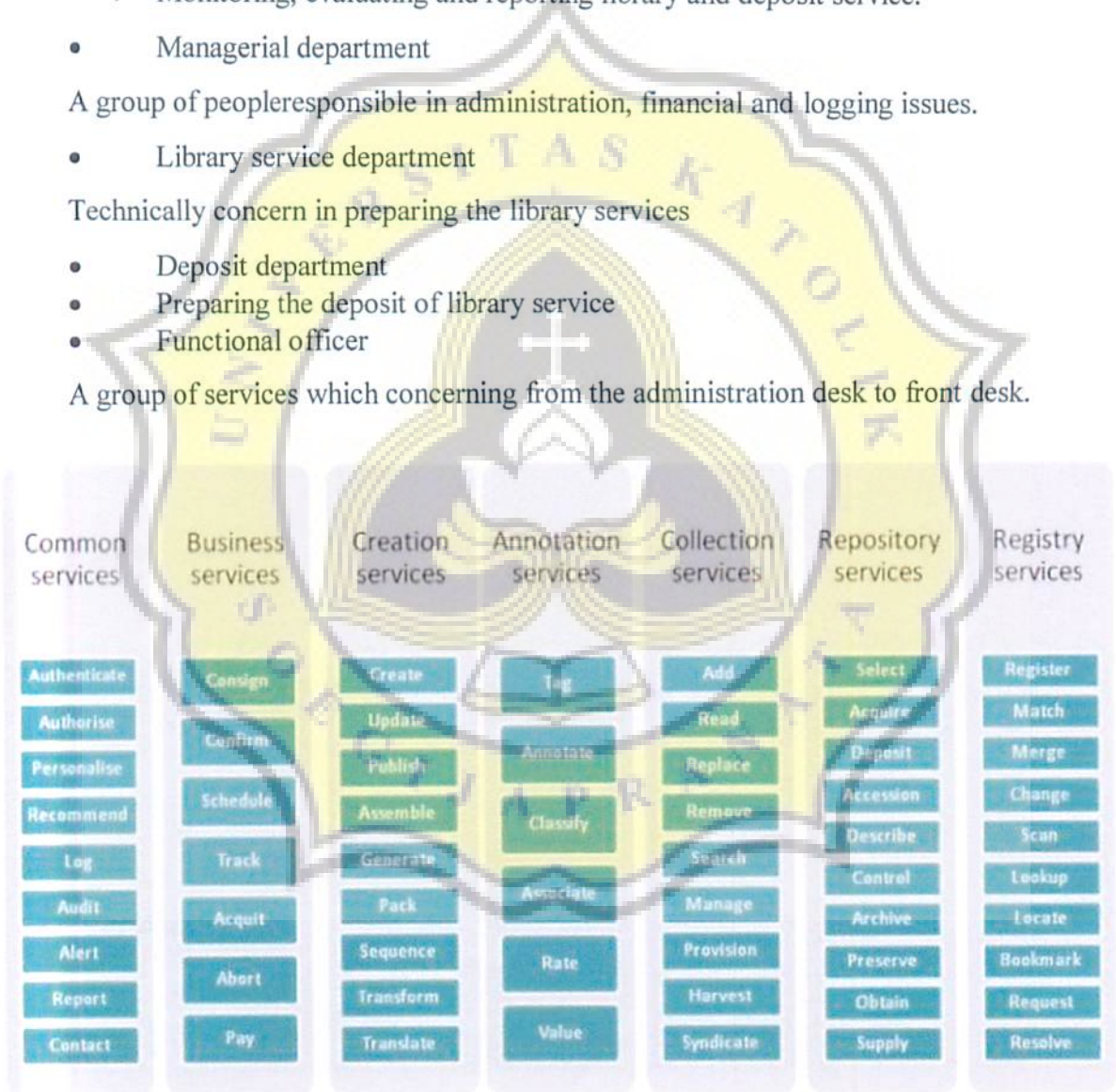
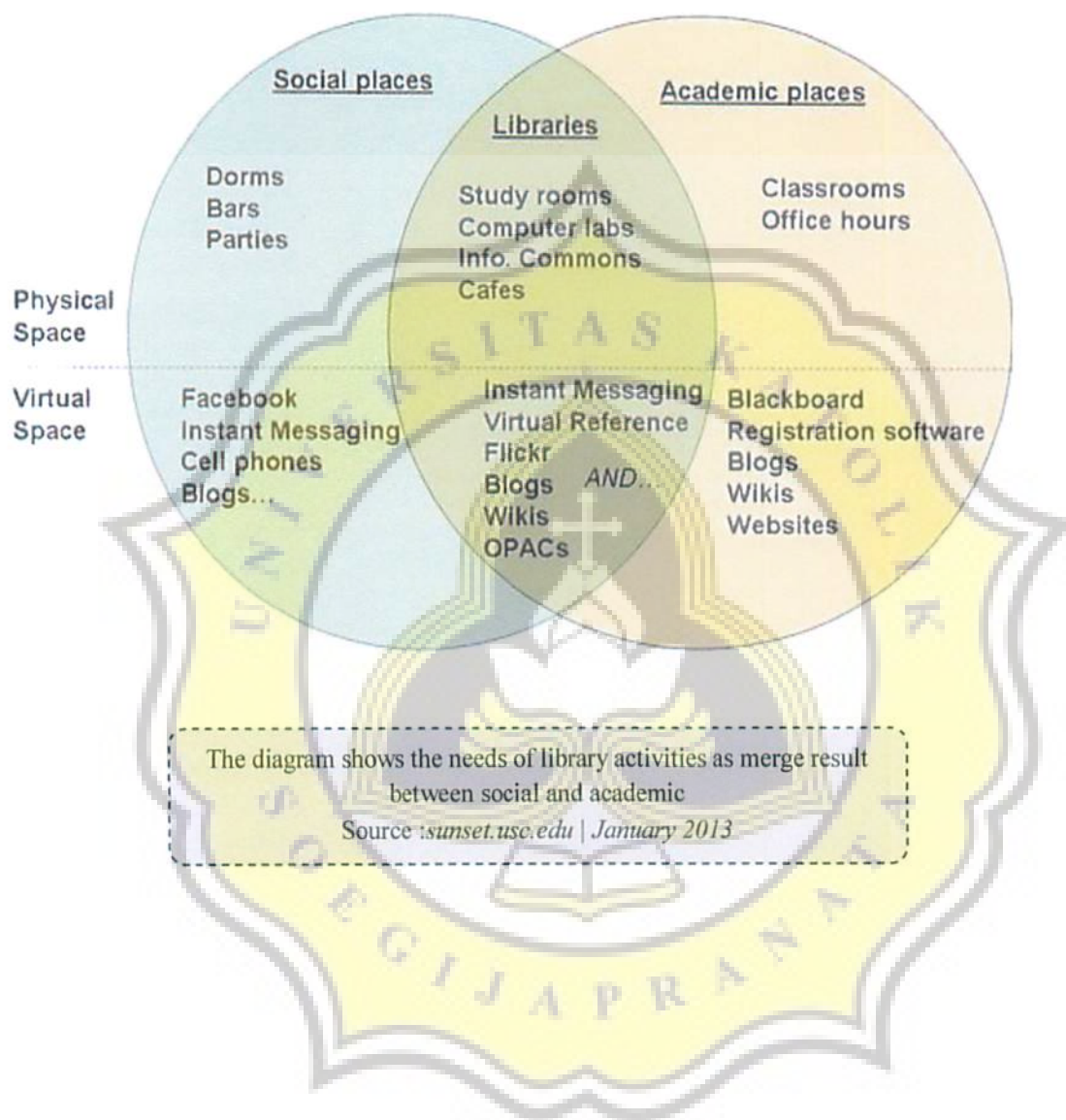


Fig.3.1 Classification of staff job description
Source: lib.

Source :sunset.usc.edu | January 2013

Dia 3.7. Activities in Library : Social and Academic merge



3.1.2 Structural Solution Approach

Structure Planning

Structure Planning has an important role of determining the rigid and how strong and stable the construction will be.

This Project will have 3 levels and need to have a wide vision as public and communal area.

Some consideration will occur as the basic thought regarding to these optional structure type:

- Structure efficiency, in order to create an effective and efficiency of the building lifetime.
- Structure has to support the appearance of the building according to function, character and impression.

Structure planning Criteria

- **Strength**

Firmly support the weight of the building

- **Stability**

The building has to stand stable and supportive structure

- **Service Ability**

As functional factor of hosting activities inside.

- **Safety**

The Safety factor of human being, building, earthquake resistant

- **Durability**

The long durability of material

Structure Allocation

Based on its position, the structure divided into these part :

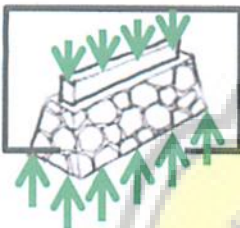
- **Low Structure**
- **Middle Structure**
- **Upper Structure**

♦ **Low Structure**

FOUNDATION

Is the system as the buttress means it sustain the building load all over the building parts, from floor, wall, roof and all the building contents. Types of foundation:

- **Belt/Row Foundation**



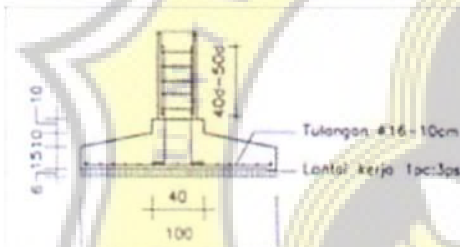
Sustain a light load. Mostly implemented on 1 level building with the depth of < 2,5 meter.

Fig.3.2 Belt/row foundation

Source :

Source: LTP 58-Widya Ayu S.-06.11..0072

- **Foot Plat**



Sustain a light-medium load. Mostly implemented on up to 3 level building .

Fig.3.3 Foot plat

Source : LTP 58-Widya Ayu S.-06.11..0072

- **Caisson**

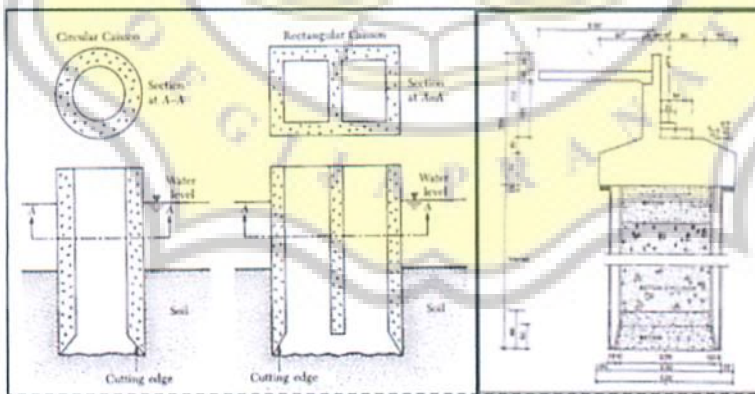


Fig3.4. :CoaissonFondation

Source : LTP 58-Widya Ayu S.-06.11..0072

Sustain a high load and mostly implemented in more tan 3 level building with a low support ground in high humid soil.

▪ **Flooring**

Regarding the library as communal space so it need aconditional floor with special specification for public area. Many types of floor based on each space requirement

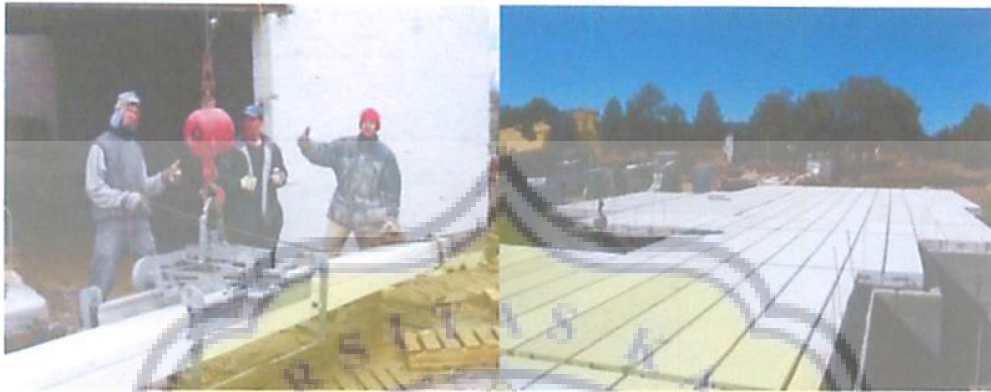


Fig3.15 : Lightweight Floor Panels
Source : <http://iconcrete.com> January 2013



Fig3.16 : Granite as interior aesthetic floor material
Source : <http://www.asiaraya.com/> January 2013

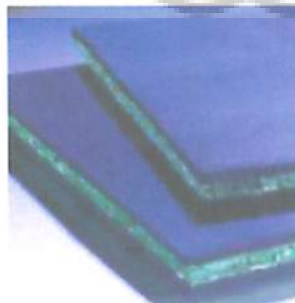


Fig3.17: Acoustic flooring (underlay)
Source: www.acoustic-supplies.com
January 2013



Tactile Floor

Concerning in difabe (blind) people as each space signature

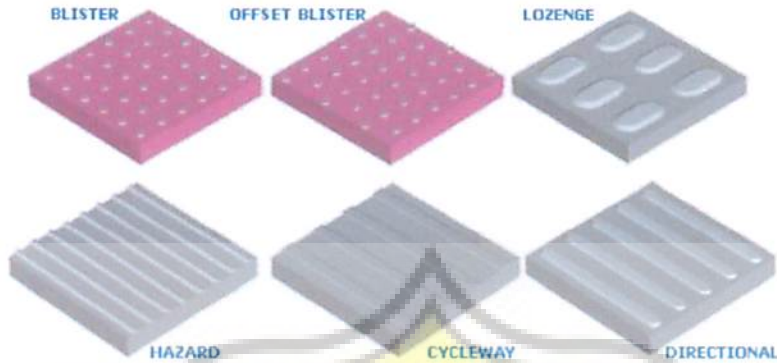


Fig3.18 : tactile paving
Source : www.pavingexpert.com | January 2013

- **Ceiling**

Gypsum ceiling consider as efficient in cost, assembling, eco-friendly and aesthetic goal. According to psychological issue, the more interesting the space is the more it attracts people to stay. In this case to attract people to stay reading in it.



Fig3.20 : Direct Fixing & Suspended gypsum ceiling system
Source : LTP 58-Widya Ayu S.-06.11..0072

▪ **Roof**

Concrete structure with several layers as gardening/plant media with improved water resistant material. Can be used as a part of plaza, and other activities on it.



Fig3.21 :Roof garden
Source :www.akuingin hijau.org | January 2013

• **Transportation system**

-Vertical transportation

Ramp

The ramp is an alternative transportation use for difable, wheel chair user. The curb ramps landing has to be less than 8 degree slope. The horizontal path with 7 degree slope has to less than 9 meter. The minimum width is 95-136 with safety space.

Type of ramp

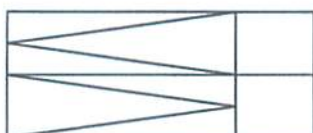
direct straight ramp



intermediate ramp



180° turn ramp



90° turn ramp



Fig3.22. Ramp
Source:www.mhi-rampsandlifts.com
January 2013

Automatic rescue device Elevator

Dumbwaiter is a freight elevator or lift between building floors. With a latest system it automatically brings the lift tube to the nearest floor level the moment when the electricity is off.

4. Dumbwaiter (Book & Goods elevator)



Fig3.23. Dumbwaiter
Source : elevatorready.com | January 2013

-Horizontal transportation

The breezeway, atrium and lounge can be classified as types of horizontal transportation. The special transportation use for book loading in order to check incoming deliveries of goods and sub-components for dangerous items and potentially lethal substances, in trucks, containers and packing cases or palletised.



Fig3.24. Breezeway
Source : www.fineartamericacom |
January 2013

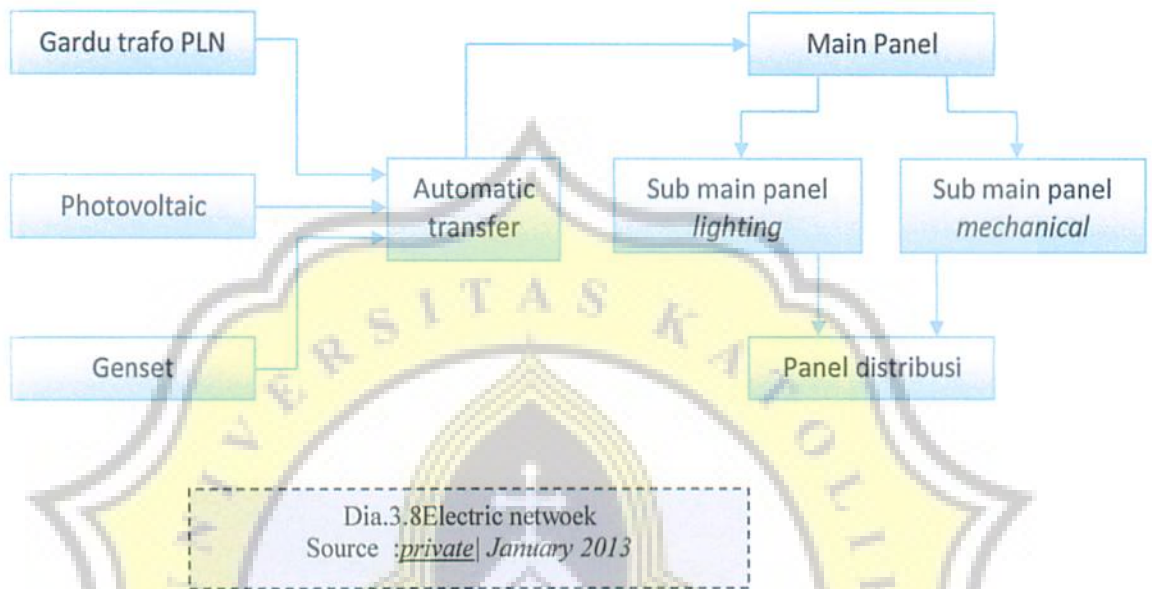


Fig.3.25 Book Loading dock
Source : www.smithsdetection.com |
January 2013

3.1.3 Utility Solution Approach

1. Electricity network

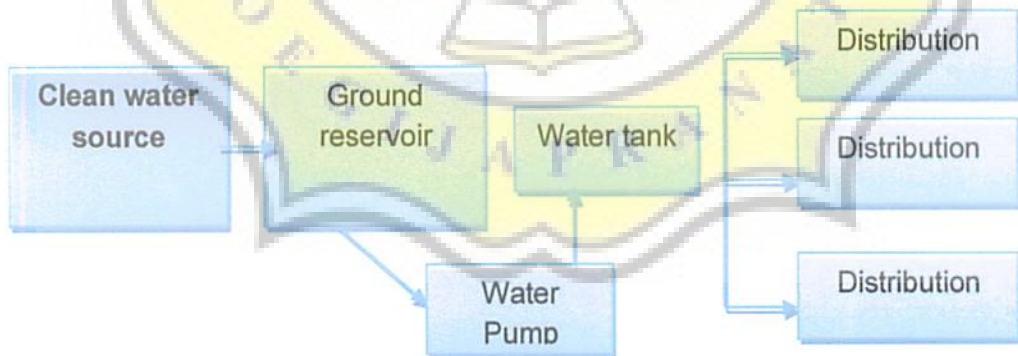
The electric source of this project comes from Government Electricity Company with a solar energy as supportive energy source.



2. Clean water

Sistem Down - Feed

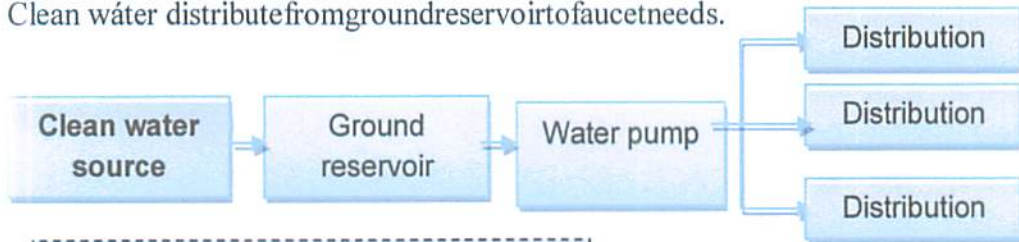
Clean water distribute from ground reservoir and pump up into a water tank, then it will be distributed down based on the faucet needs.



Dia.3.9 Down feed system
Source :*private* | January 2013

3. Sistem Up - Feed

Clean water distribute from ground reservoir to faucet needs.



Dia.3.10 Up feed system
Source :*private* | January 2013

4. Grey water

Solvent : Lavatory/urinary, rain water, dishwater

Dense : septictank

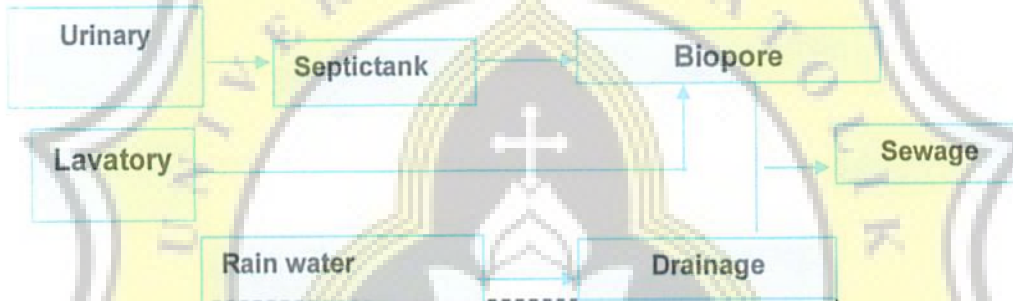


Fig.3.11. Clean water distribution system
Source:*LTP 58-Widya Ayu S.-06.11..0072*



Underground system

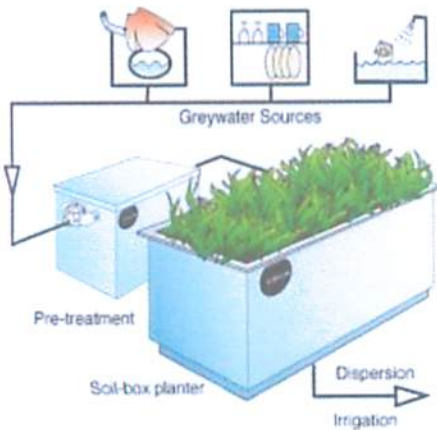
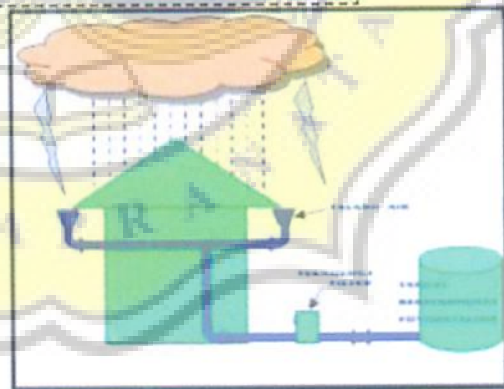


Fig3.24 :Recycle Grey Water
Source:*www.greengaragedetroit.com* |
January 2013

5. Fire Protection

Paper based documents can ignite from open flames (e.g. from sparks caused by defective electrical wiring, or a carelessly thrown match or cigarette).

The chances that the documents will ignite depend on the intensity and duration of the heat released from the source of the flame.

BAS (Building Automatic System) integrating evacuation with continue system between fresh air circulation system and lighting system.

Instruction : fire occur, alarm automatically works, detect fire spot, emergency exit door automatically open, emergency exhaust fan automatically Works, AHU off.

Fire detector system



Fig.3.25 :HeatDetector

Source : firesafetysupplier.com | Jan 2013

Fig3.26: Smoke Detector

Source : commons.wikimedia.org | 2013

Smoke detector : Have a high sensibility of smoke indication

Heat detector : Have a high sensibility of temperature increase.

6. Fire Protection system

a) Portable Fire Extinguisher

Manually portable tools with 25 m length pipe to spring the water



Fig.3.27 : Fire Extinguisher

Source : en.wikipedia.org | January 2013

b) Sprinkler System

The most reliable of all sprinkler systems is a wet-pipe system. A wet-pipe system is one where the overhead pipes are filled with water and the system is always ready for operation. A sprinkler system using automatic fire sprinklers installed along a piping system containing water and connected to a water supply so that water is discharged immediately from sprinklers opened due to heat from a fire.

Pre-action sprinkler systems are systems where the overhead pipes are normally dry. A supplemental fire detection system must be installed in the same area as the sprinklers. Activation of this supplemental fire detection system releases a valve that allows water to fill the pipes, essentially converting the system to a wet-pipe system. Water is not released until a sprinkler head is activated. This type of system minimizes the possibility of accidental water damage due to sprinkler pipe or head being mechanically damaged.

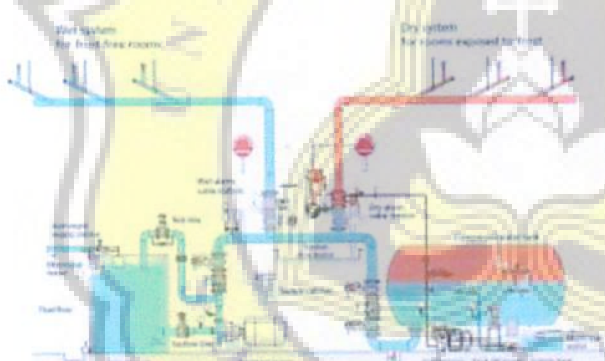


Fig3.28:sprinkle pipe system

Source :enggcyclopedia.com | January 2013

Fig3.29:Sprinkle head

Source :firesecurity.co.nz | January 2013

c) Hydrant Box

Diletakkan dalam bangunan pada jarak 30 m untuk ruang seluas 800 m².

Pipa penyiram ditempatkan dalam kotak kaca yang ditanam di dalam dinding bangunan seperti hall, koridor/ tempat lainnya yang mudah dicapai.



Fig3.30:Hydrant Box

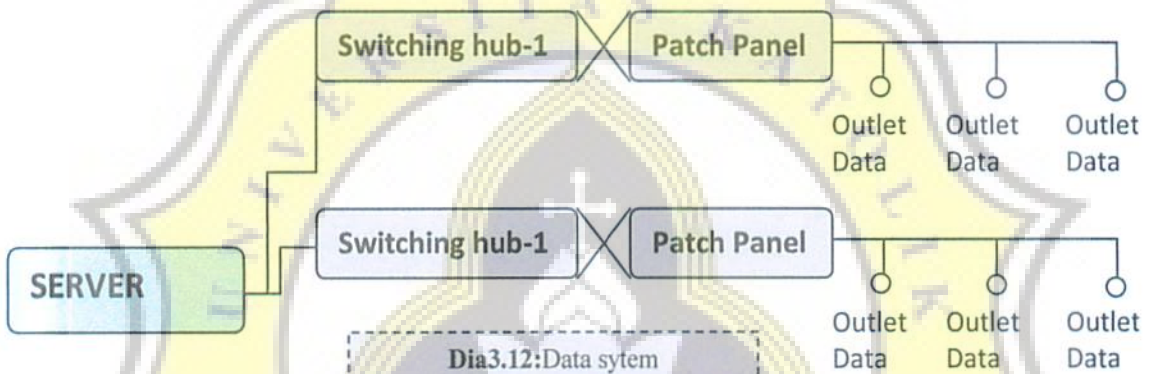
Source :private doc. | January 2013

4. Stand Pipe and Hose System



Fig.3.31 : Stand Pipe and Hose System
Source: *en.wikipedia.org* | January 2013

Data system



5. Communication system

Internal

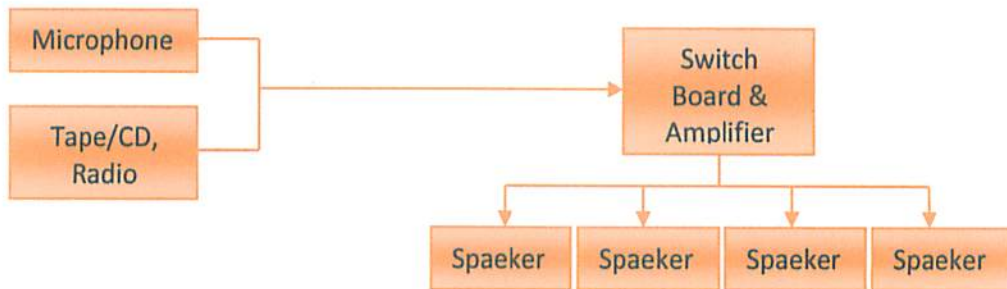
With 1 way communication speaker dan intercom for 2 ways communication

Intercom



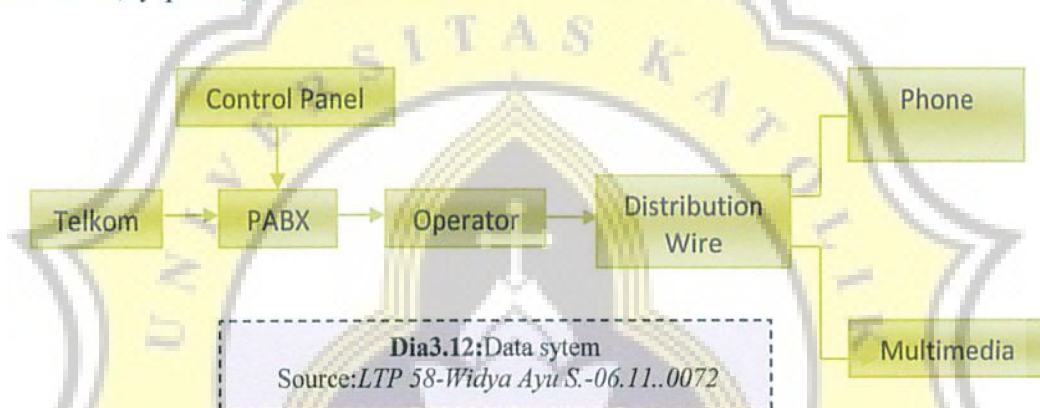
Fig3.13: Communication system
Source : *trade-world.org* | January 2013

Speaker



Dia3.12:Data sytem
Source:LTP 58-Widya Ayu S.-06.11..0072

Eksternal, by phone, faximile & internet.



Dia3.12:Data sytem
Source:LTP 58-Widya Ayu S.-06.11..0072

6. Lightning rod system

The purpose of most systems is to conduct and control the lightning current away from the building by providing a direct and easy low-resistance electrical path to the ground.

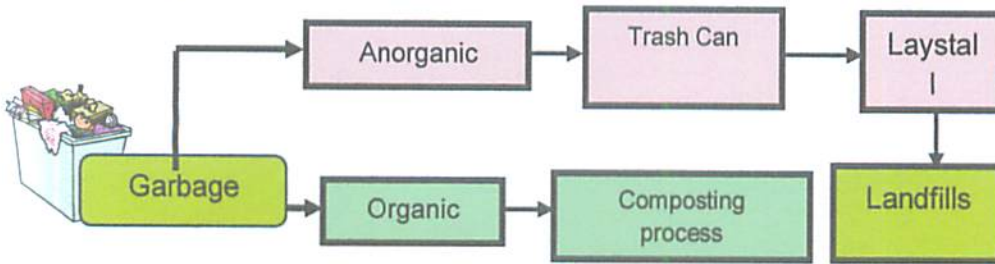
a. Franklin

The fundamental principle used in Franklin-type lightning protections systems is to provide a sufficiently low impedance path for the lightning to travel through to reach ground without damaging the building.

b. Faraday

This is accomplished by surrounding the building in a kind of Faraday cage. A system of lightning protection conductors and lightning rods are installed on the roof of the building to intercept any lightning before it strikes the building.

7. Litter system



Dia3.14:Ltter system
Source:LTP 58-Widya Ayu S.-06.11..0072

8. Building protection system

Protect buildings against the accidental or deliberate release of chemicals, shutting down HVAC systems. Monitor activities with an intelligent video network that helps the threat assessment process and records actual events.

Conventional system; security staffing, infrastructure, security training

Electrical system, CCTV (Closed Circuit Television) is the use of video cameras to transmit a signal to a specific place, on a limited set of monitors.

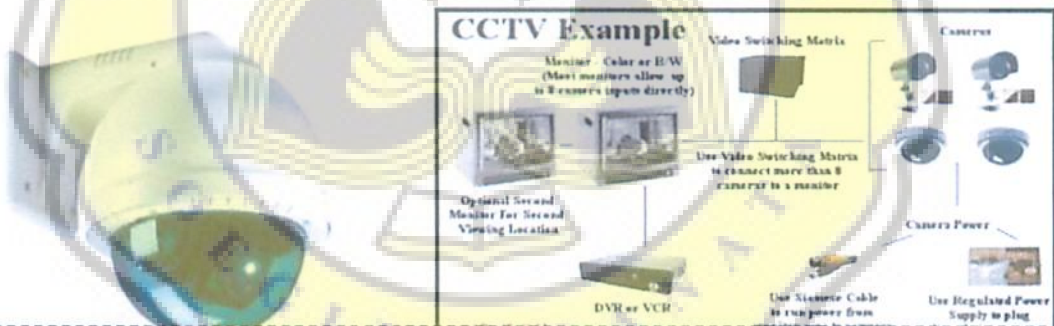


Fig3.32 : CCTV Camera
Source:www.laserelectrical.co.nz
| January 2013

Fig3.33 : CCTV operating scheme
Source:www.pacificcable.com | January 2013

3.1.4. Building Performance

1. Lighting system

Lighting or **illumination** is the deliberate use of light to achieve a practical or aesthetic effect. Lighting includes the use of both artificial light sources like lamps and light fixtures, as well as natural illumination by capturing daylight. In some design instances, materials used on walls and furniture play a key role in the lighting effect. Dark paint tends to absorb light, making the room appear smaller and more dim than it is, whereas light paint does the opposite. In addition to paint, reflective surfaces also have an effect on lighting design. Surfaces or floors that are too reflective create unwanted glare.

Day lighting (using windows, skylights, or light shelves) is sometimes used as the main source of light during daytime in buildings. This can save energy in place of using artificial lighting, which represents a major component of energy consumption in buildings. Proper lighting can enhance task performance, improve the appearance of an area, or have positive psychological effects on occupants.

Indoor lighting is usually accomplished using light fixtures, and is a key part of interior design. Lighting can also be an intrinsic component of landscape projects.

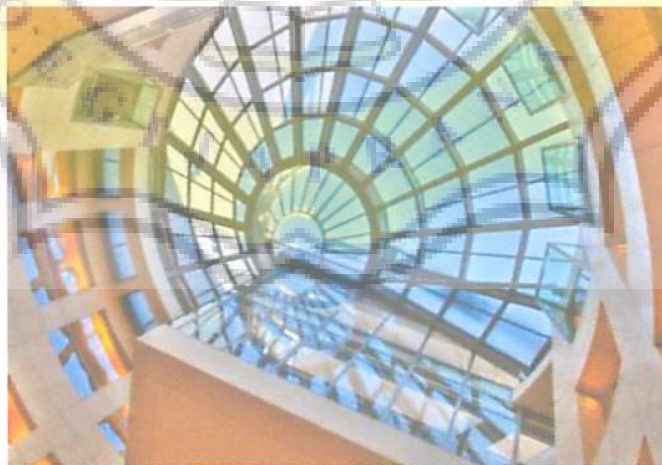


Fig3.34 :Skylight

Source:www.aaronhockley.com| January 2013

Lighting is classified by intended use as general, accent, or task lighting, depending largely on the distribution of the light produced by the fixture.

- Task lighting is mainly functional and is usually the most concentrated, for purposes such as reading or inspection of materials. For example, reading poor-quality reproductions may require task lighting levels up to 1500 lux and some inspection tasks or surgical procedures require even higher levels.
- Accent lighting is mainly decorative, intended to highlight pictures, plants, or other elements of interior design or landscaping.
- General lighting (sometimes referred to as ambient light) fills in between the two and is intended for general illumination of an area. Indoors, this would be a basic lamp on a table or floor, or a fixture on the ceiling. Outdoors, general lighting for a parking lot may be as low as 10-20 lux since pedestrians and motorists already used to the dark will need little light for crossing the area.

a. Direct Lighting

Lighting provided from a source without reflection from other surfaces. In daylighting, this means that the light has travelled on a straight path from the sky (or the sun) to the point of interest. In electrical lighting it usually describes an installation of ceiling mounted or suspended luminaires with mostly downward light distribution characteristics.

Advantages:

- Very energy effective lighting.
- Plastic display of three dimensional objects, eg. sculptures.
- Well suited for zonal or accent lighting.
- Can create a vivid environment with attractive light and shadow patterns eg. on wall surfaces.

Disadvantages:

- The ceiling is relatively dark, which can cause a "cave like" environment.
- Luminaires with wide opening angle that are badly positioned can cause reflected *glare* on computer screens, dark "executive style" desk surfaces or glossy paper.
- Harsh shadows can be unflattering when cast on human faces.

b. Indirect Lighting

Lighting provided by reflection usually from wall or ceiling surfaces. In day lighting, this means that the light coming from the sky or the sun is reflected on a surface of high reflectivity like a wall, a window sill or a special redirecting device. In electrical lighting the luminaires are suspended from the ceiling or wall mounted and distributes light mainly upwards so it gets reflected off the ceiling or the walls.

Advantages:

- Creates a soft, undisturbing environment suitable for concentrated work or viewing paintings or drawings.
- Reflective glare on computer monitors can be controlled more easily.
- Displays human faces advantageously for social gatherings.
- Can be installed without disturbing the ceiling surface (eg. in historical buildings or a painted ceiling).

Disadvantages:

- It can be disturbing if the ceiling is the brightest surface in a room.
- Makes it difficult to recognize details on three dimensional objects.
- There is very little contrast in the room which can be boring.
- Not very energy effective.

c. Type of Lighting method

a. Compact fluorescent lamps

Compact fluorescent lamps (aka 'CFLs') use less power to supply the same amount of light as an incandescent lamp. Due to the ability to reduce electric consumption, many organizations have undertaken measures to encourage the adoption of CFLs

b. LED lamps

LED lamps have been advocated as the newest and best environmental lighting method. According to the Energy Saving Trust, LED lamps use only 10% power compared to a standard incandescent bulb, where compact fluorescent lamps use 20% and energy saving halogen lamps 70%. The lifetime is also much longer - up to 50,000 hours. A downside is still the initial cost, which is higher than that of compact fluorescent lamps.

2. Air Circulation system

Types of ventilation

- Mechanical or forced ventilation: through an air handling unit or direct injection to a space by a fan. A local exhaust fan can enhance infiltration or natural ventilation, thus increasing the ventilation air flow rate.



Fig3.36 :Air Handling Unit(AHU)
Source:www. airclean.co.uk| January 2013

Fig3.37 :Central AirConditioner Unit
Source:www. airclean.co.uk| January 2013

- Natural ventilation occurs when the air in a space is changed with outdoor air without the use of mechanical systems, such as a fan. Most often natural ventilation is assured through operable windows but it can also be achieved through temperature and pressure differences between spaces.
- Mixed Mode Ventilation or Hybrid ventilation: utilizes both mechanical and natural ventilation processes. The mechanical and natural components may be used in conjunction with each other or separately at different times of day. The natural component, sometimes subject to unpredictable external weather conditions may not always be adequate to ventilate the desired space. The mechanical component is then used to increase the overall ventilation rate so that the desired internal conditions are met.
- Infiltration is separate from *ventilation*, but is often used to provide *ventilation air*.

d. Cross Ventilation

Wind generates complex pressure distributions on buildings, particularly in urban environments. This assists ventilation, provided that openings are well distributed and flow paths within the building are available.

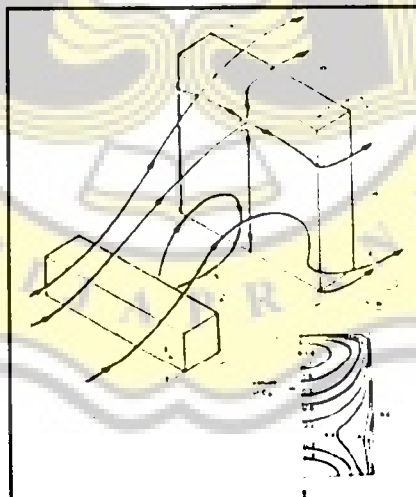


Fig3.39 : Cross ventilation in urban environment
 Source : www.architecture.com | January 2013

3. Acoustic

The acoustical design issues for libraries involve the following principal issues:

- Site noise considerations, including the control of noise transfer to a project's Neighbors, particularly if they are residential.
- Establishing noise standards for each use space, including limitation of excessive ventilation noise.
- Room acoustics considerations.
- Sound isolation between various use spaces.
- Vibration control for mechanical equipment.
- Audio/visual system considerations.

Adding sound-absorbing materials to a space usually becomes an interior design issue in the library. Many options are possible to provide sound absorption on walls and ceilings, which are attractive and maintainable. Absorptive materials are often covered with *acoustically transparent* surfaces such as fabric, perforated metal and spaced wood slats. These surfaces allow the sound energy to pass through and be absorbed by the material located behind.

One of the most essential techniques in acoustics is reducing the transmission of sound through solid barriers in buildings. This is called Sound Insulation



Fig3.40 : Acoustical perforated-metal deck.
Source : www.librisdesign.org| January 2013

Fig3.41 : Lay-in acoustical ceiling tile.
Source : www.librisdesign.org| January 2013



Fig3.42 : Acoustic insulation wool
Source : www.knauf.com| January 2013

4. Photovoltaic Cell

A solar cell (also called a photovoltaic cell) is an electrical device that converts the energy of light directly into electricity by the photovoltaic effect. It is a form of photoelectric cell (in that its electrical characteristics—e.g. current, voltage, or resistance—vary when light is incident upon it) which, when exposed to light, can generate and support an electric current without being attached to any external voltage source.

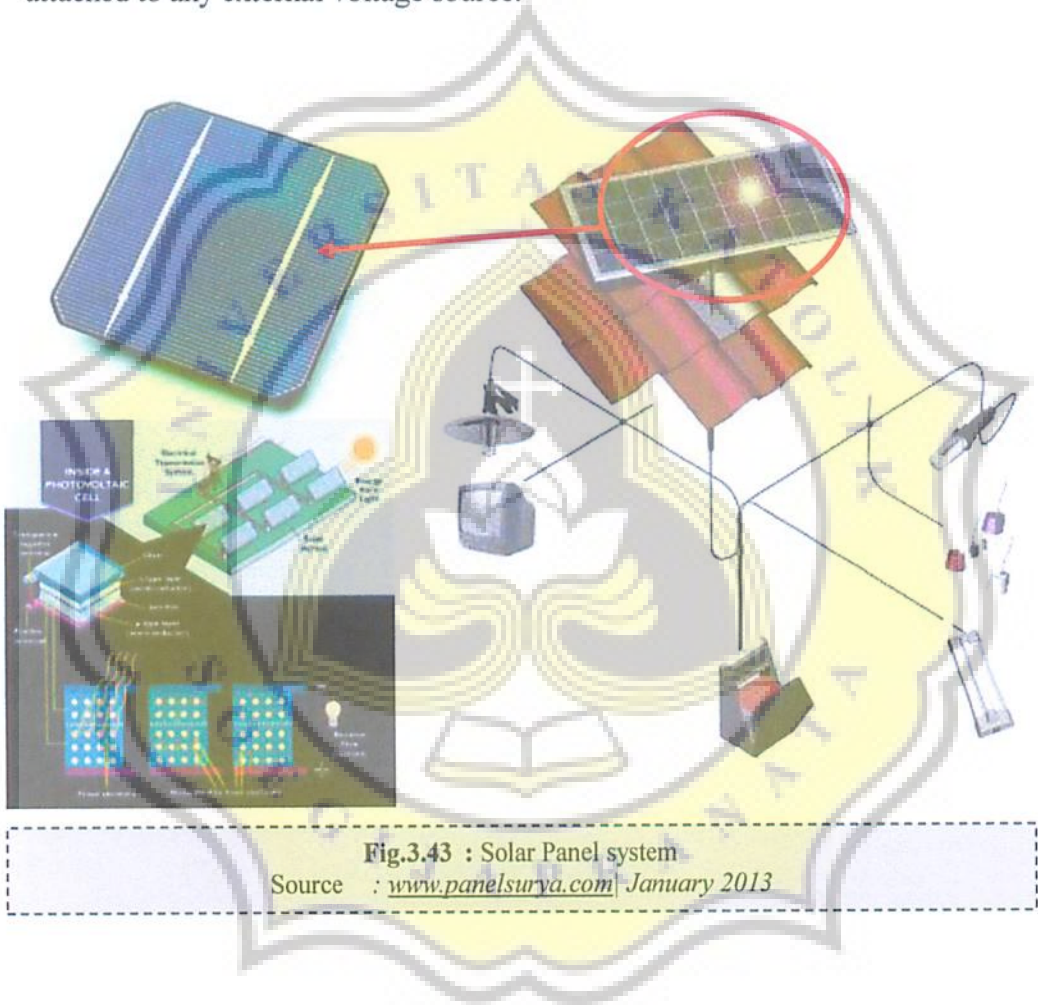


Fig.3.43 : Solar Panel system

Source : www.panelsurya.com January 2013

5. Green Roof

According to LTP 58-Widya Ayu S.-06.11..0072:

Roofs that really hold water

Green roofs vary in plant types used, size and shape, but may consist of some or all of the following:

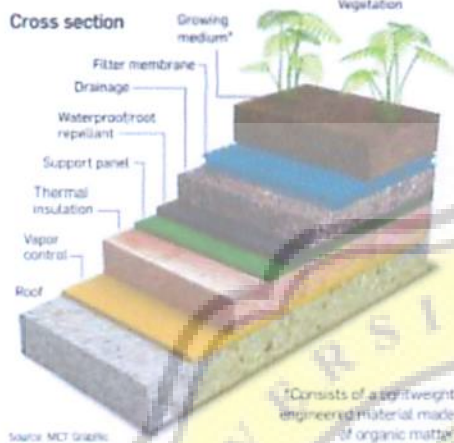


Fig.3.44 : Roof garden layering

Source : www.greengarage.com | January 2013

Green roofs are used to:

- Reduce heating (by adding mass and thermal resistance value)
A 2005 study by Brad Bass of the University of Toronto showed that green roofs can also reduce heat loss and energy consumption in winter conditions.
- Reduce cooling (by evaporative cooling) loads on a building by fifty to ninety percent, especially if it is glassed in so as to act as a terrarium and passive solar heat reservoir – a concentration of green roofs in an urban area can even reduce the city's average temperatures during the summer
- Reduce storm water run off
- Natural Habitat Creation
- Filter pollutants and carbon dioxide out of the air which helps lower disease rates such as asthma
- Filter pollutants and heavy metals out of rainwater

- Help to insulate a building for sound; the soil helps to block lower frequencies and the plants block higher frequencies
- Green roofs not only retain rainwater, but also moderate the temperature of the water and act as natural filters for any of the water that happens to run off.

6. Wi Fi

Wi-Fi (pronounced why fy, also spelled *Wifi* or *WiFi*) is a popular technology that allows an electronic device to exchange data wirelessly (using radio waves) over a computer network, including high-speed Internet connections. A device that can use Wi-Fi (such as a personal computer, smartphone, tablet) can connect to a network resource such as the Internet via a wireless network access point. Such an access point (or hotspot) has a range of about 20 meters (65 feet) indoors and a greater range outdoors. Hotspot coverage can comprise an area as small as a single room with walls that block radio waves or as large as many square miles — this is achieved by using multiple overlapping access points. *wikipedia.com*

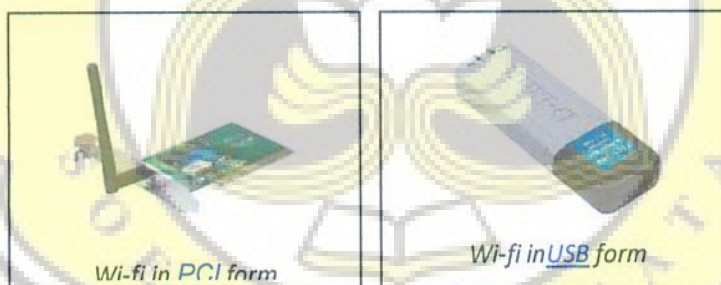


Fig.3.45 :Wi Fi operating system
Source :*ILTP58-Widya Ayu S.-06.11.0072*

7. Special Technology of Library System

The Urban Library Plaza can be classified as modern and hybrid design which means they need a technology that support the term of digitalization, it can be determined by how the data would be saved. The library used to store the manuscript (mostly in concrete matter) in a storage room. Nowadays the IT-based library would use a compact and digitalized way of manuscript storage which means they need a huge database to cover it up.

A. An automated storage and retrieval system (ASRS or AS/RS)

According to Material Handling Industry of America - Glossary"Retrieved 13 July 2012 : An automated storage and retrieval system (ASRS or AS/RS) consists of a variety of computer-controlled methods for automatically placing and retrieving loads from specific storage locations. The Automated Storage and Retrieval System (ASRS) , or "library robot," can fetch books in as little as two minutes. Holding almost two million items and offering closed climate controlled storage, the ASRS holds more books than traditional bookshelves, making room for more reading spaces



Fig 3.46. The AS/RS system with conveyor
source: www.colby.net.au| January 2013

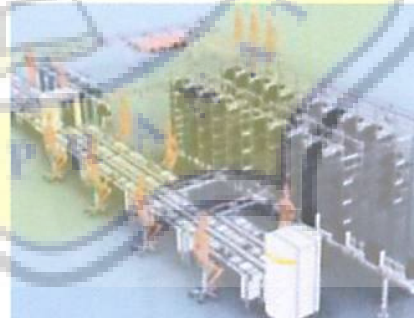


Fig 3.47. The AS/RS system
source: www.directindustry.com|
January 2013

- B. In order to protect the originality of copyright, the library have to featured with a software of **The Paper Misconduct Literature Check System (PMLC)** and other security standards. Besides of checking papers, the system has a credit database to record writer's misconduct in plagiarism. That system and other security standard such as The BMI anti-theft system is a new state-of-the-art high-tech electronics unit exhibiting innovative operation and with extremely high detection rates.
- C. The high performance of **Lib-Chip™ RFID** tags provides for the quick and easy checkout and return of multiple items., and multi-part media sets. Moreover, the Automated Sorting Secure supply conveying and sorting systems that demanding library users find easy and convenient to use. In addition, to enlarge libraries networking, there would have a system operates like an inter-library loan system



Fig 3.48 The BMI anti-theft system
source: www.librarysecurity.co.uk
January 2013

Fig 3.49 The Automated Book Sorting system
source: www.librarysecurity.co.uk | January
2013

The advantages of RFID system:

- No line of sight needed
- Allows to check-out and check-in several items simultaneously
- Information directly attached to product
- Performing both identification and antitheft in one single operation
- Different shape and sizes available
- Accelerate scanning and identifying

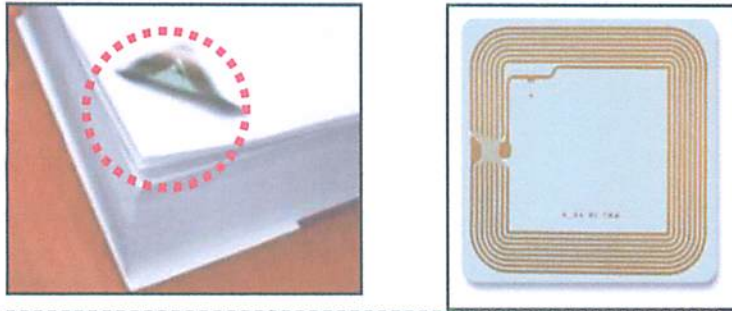


Fig 3.50 The RFID system
 source: www.rfid-library.com | January 2013

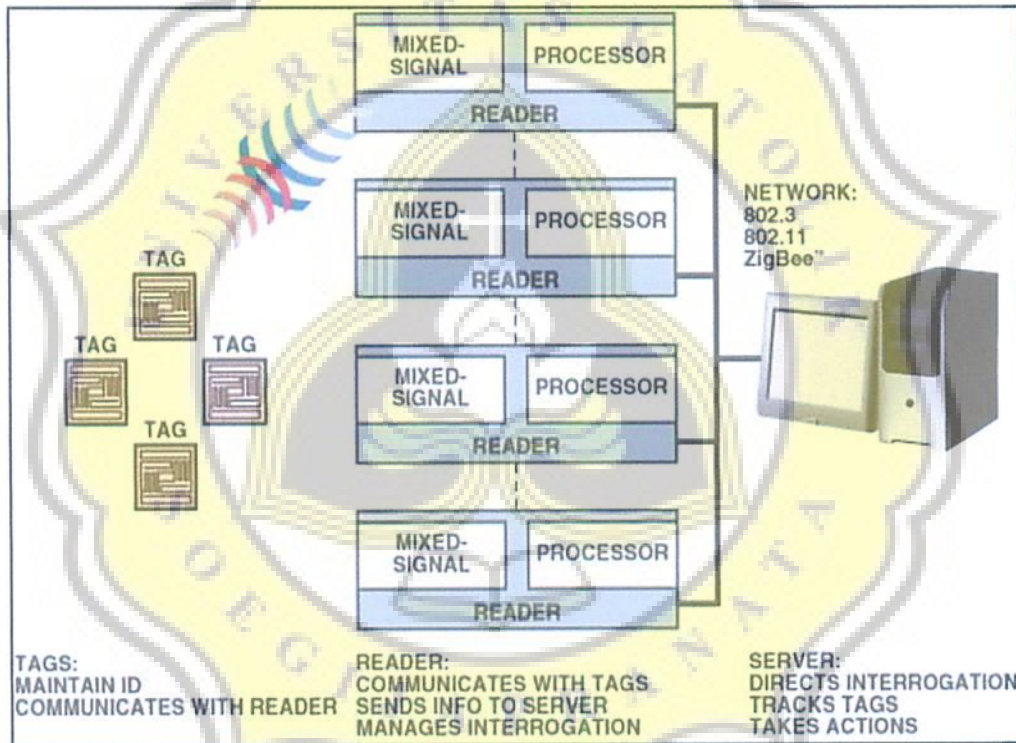


Fig 3.51 How The RFID system works
 source: www.rfid-library.com | January 2013

1.5 Site Approach

A. Location Feasibility study

Definitive determine of city

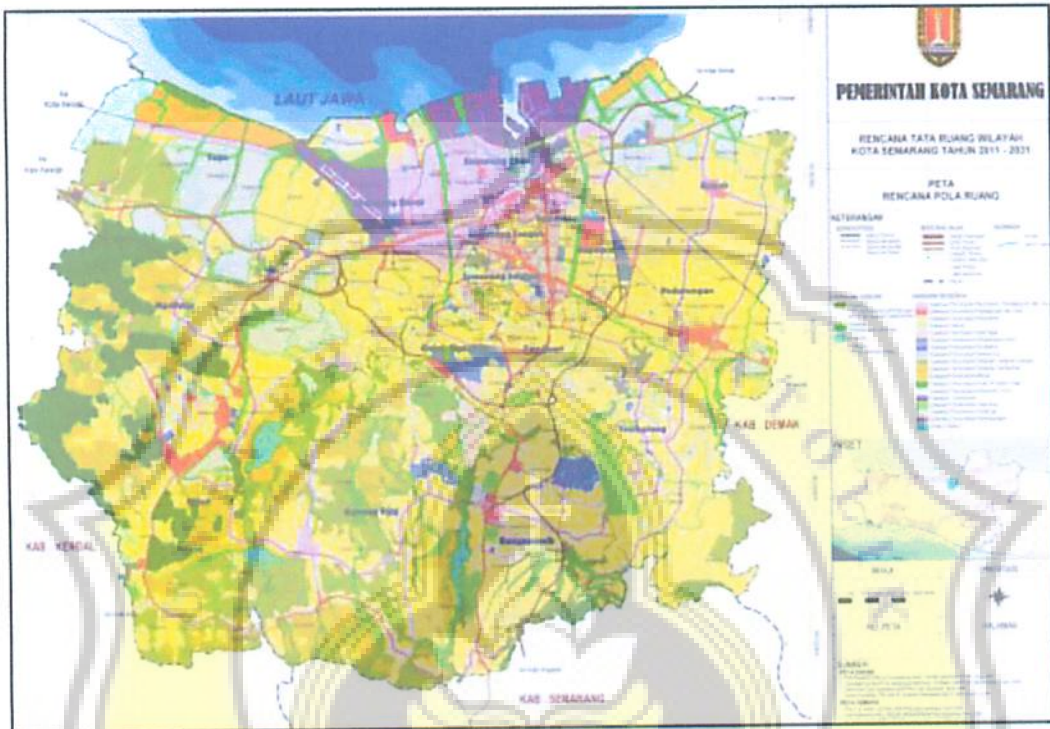


Fig.3.52 Semarang Region Map
source: www.bappeda.semarang.go.id

The location of this upcoming project has to be in urban region that has more than 1 million citizen. Based on the urban issue and theory (find the 2nd chapter) there are several factor that support Semarang as Urban area.

The following map below shows Semarang as a part of the Urban area among other Urban areas around the world (Urban development statistic 2006)

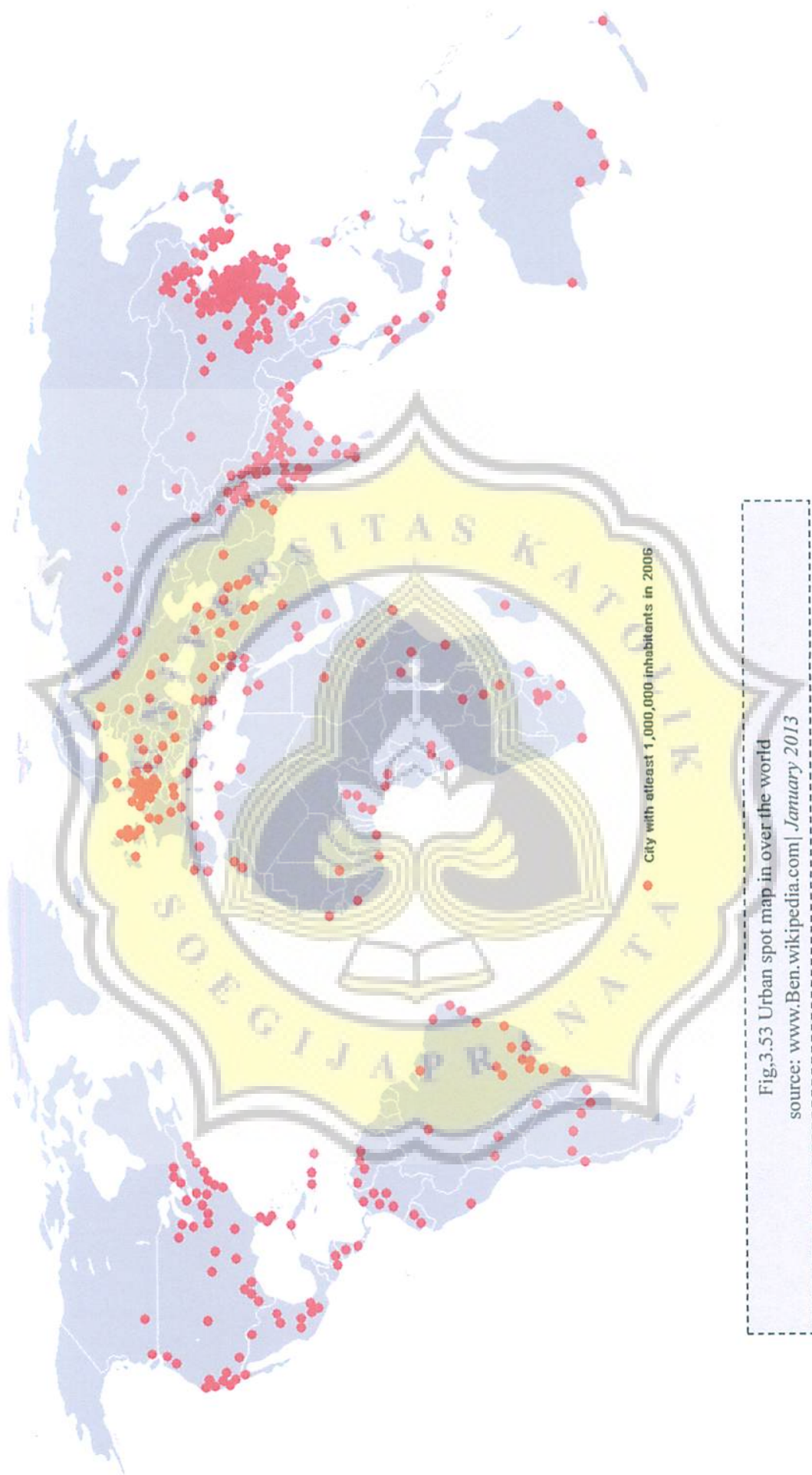


Fig.3.53 Urban spot map in over the world
 source: www.Ben.wikipedia.com | January 2013

Semarang is a city on the north coast of the island of Java, Indonesia. It is the capital and largest city of the province of Central Java. Semarang is the only city in the province of Central Java that can be categorized as a metropolitan city

It is Indonesia's 4th largest metropolitan area, after Greater Jakarta, Gerbangkertosusila (Surabaya), and Bandung Metropolitan Area with a total area of 373.7 km² and a population of 1,454,594 inhabitants with 5,100/km² population density

Administratively, Semarang City is divided into 16 subdistricts and 177 villages. The biggest district is Mijen, in the eastern part of the city (62.15 km²) and the smallest is Candisari district (5.56 km²).

Semarang City is located between 6°50' 7" 10" South Latitude and 109° 35' 11" 50" East Longitude. It borders to Kendal Regency in the west, Demak regency in the east, Semarang regency in the south, and Java Sea in the north with coastal line length along 13.6 km. Semarang City is located in the height of 0.75 until 348.00 asl.

This city supported by an international seaport and national scale airport. From a regional development perspective, the position of Semarang Municipality is strategic.

Besides being a transit point between the two main growth centers in Indonesia, Jakarta and

Surabaya, it also connects three major development corridors in Central Java.

Based on Semarang Local Government Regulation of city planning, Municipal District (BWK) II (sub-district Candisari & Gajahmungkur) with total area 1,320,516 ha; & BWK VI (sub-district Tembalang) dengan luas 4,420,057 ha; that has huge proportion of **Sport and Educational Space**. (find the attached files).

B. Site feasibility

According to Thompson, 1989, the consideration of site feasibility:

1. *The relationship with existing buildings* in the immediate neighborhood with regard to both the general environment and possible limitations on a freedom to plan
2. *The adequacy of the site* for future extensions to the building
3. *External traffic patterns* in the neighborhood as decreed in the overall traffic plans, road access to the building in a way considered suitable
4. *Noise factor*, if noise from the immediate surrounding area is inevitable, (traffic, student movement, etc) provision of protection must be made in the structure, layout, surface and external environment
5. *Immediate surroundings*, gardens or other areas to insulate the library from its neighborhood or to improve its appearance
6. *Car parking*- related to the planning authority
7. *Pedestrian access routes*, need some protections for the visitor approaching the building
8. *Access for servicing* - have to be kept separate from the public approach.

C. Specific Location criteria

As a space that belongs to public service and upcoming hit spot for the urban, therefore some terms are considered as below:

1. Located in 'golden site'⁵ which promise a good beneficial prospect supported by the Semarang Local Government Regulation of long-term district development

The selected sub-districts belong to Spatial plan of City planning of educational development area

2. Placed in the civic center where people will notice this location
3. Easy to get the access by the main roads and the public transportation on its surrounding
4. Surrounded by main traffic access

⁵Golden site means a site located in strategic place that beneficially effect to any circumstances on it.

5. The area belongs to urban living so it will not be buried by the building of the upcoming project

There are several existing libraries in Semarang (find attachment of its spreading location) :

1. Diponegoro University, Pleburan
2. BPIP Marine Campus
3. Municipal Library of Semarang
4. Manuscript and Archive Library
5. Soegijapranata Catholic University
6. Widya Puraya Diponegoro University, Tembalang
7. IAIN Walisongo, Ngaliyan

Here is the Feasibility study of Urban Library Plaza on each BWK in Semarang:

Tb 3. 8 BWK Faesibility Study

BWK Faesibility Study		Value
BWK I	<ul style="list-style-type: none"> ▪ High density population and traffic ▪ Most of business and office sector ▪ There is a municipal library ▪ Civic center 	Suitable
BWK II	<ul style="list-style-type: none"> ▪ Contour relief location ▪ Medium traffic with dense population ▪ There is no city library ▪ Civic center 	Suitable
BWK III	<ul style="list-style-type: none"> ▪ Out of Civic center 	Not suitable
BWK IV	<ul style="list-style-type: none"> ▪ Out of civic center 	Not suitable
BWK V	<ul style="list-style-type: none"> ▪ Out of Civic center 	Not suitable
BWK VI	<ul style="list-style-type: none"> ▪ Out of civic center 	Not suitable
BWK VII	<ul style="list-style-type: none"> ▪ Out of civic center 	Not suitable
BWK	<ul style="list-style-type: none"> ▪ High contour relief 	Not suitable

VIII	<ul style="list-style-type: none"> ▪ Not a part of civic center 	
BWK IX	<ul style="list-style-type: none"> ▪ Not a part of civic center ▪ Long way access 	Not suitable
BWK X	<ul style="list-style-type: none"> ▪ Industrial sector ▪ There is a university library 	Not suitable

Source : private analysis | March 2013



D. Site Selection

a. BWK 1 - Imam Bonjol Street

The location of the site belongs to district center, make this district an accessible site for this upcoming project.

Location : Imam Bonjol Street

Existing Site : Demolished office building, private owner

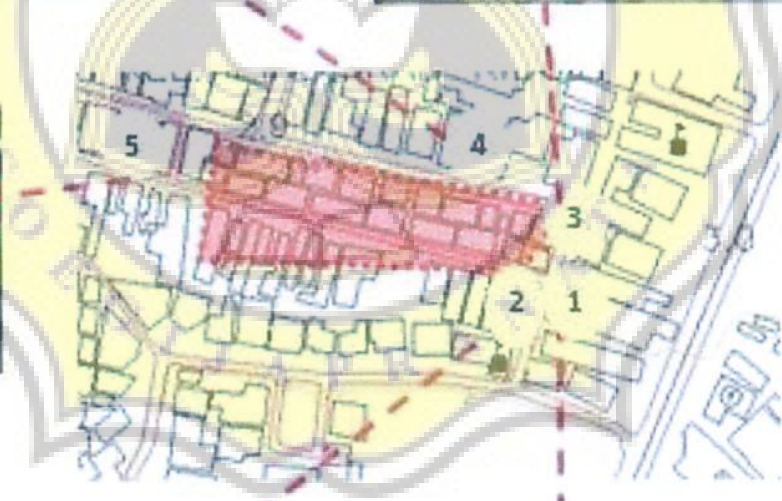
- Flat ground
- Dense settlement surrounding
- Complete infrastructure Facility
- High-mobility area
- None existing vegetation, only in the pedestrian.



Fig.3.54 BWK II on Semarang Region Map
source: www.bappeda.semarang.go.id



Fig 3.55 The existing condition of the 1st site



▪ **Site Boundaries:**

1. East : PT.Pupuk Sriwijaya
2. South : Law Firm, Dentist Clinic
3. West : Imambojol street with high mobile traffic
4. North-east: STEKOM Admin Office
5. West : Dian Nuswantoro University

SWOT Analysis factors;

STRENGTH The strength of this site is on the location that exactly placed on the TuguMuda area. The site is easy to get by public transport, and private.

WEAKNESS

The site is passed by secondary artery road of Imam Bonjol street which has a very high mobility and can harm the acoustic factor of the library.

OPPORTUNITY

The high density population and school/academy board on its surrounding support the reading persuasion among the citizen.

THREAT

Regarding the accessibility that might cause more traffic concerning it has no large space for the user to get through from the street to its site.

b. BWK II (Gajahmungkur-Candisari Subdistrict)

Location : No.2 Veteran Street (Between the Veteran main street and Sumbing street)

Existing site : Used site of Chinese cemetery, abandoned area

▪ Site boundaries:

- East : LIA Language center
- South : Lemponsari settlement
- West : Semarang Region Electoral Commission office
- North : Veteran high road, settlement

- Site is a hook area between veteran road to sumbing street
- Increased ground level from lower veteran road and getting higher back to sumbing street
- Dense settlement surrounding
- Complete infrastructure facility
- High-mobility area
- Vegetation cover all over the site

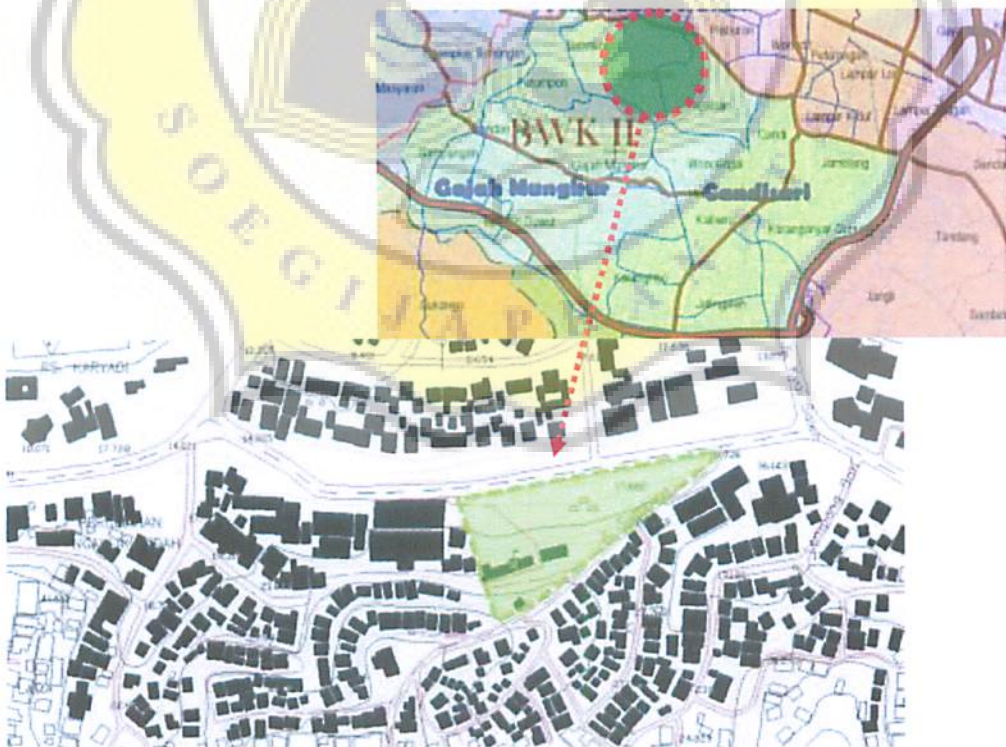


Fig3.56 Selected Site on GajahMungkur sub-district belongs to BWK II
Taken by CAD Semarang Map



Fig 3.58. The street to sumbing street , in the hilly side of site there are some street vendors

Tb. 3.9 Site Selection

Criteria	Precentage	SITE 1 (Imam Bonjol)	SITE 2 (Veteran)
Location	30%	3	3
Accesibility	10%	2	3
Topography	10%	2	2
Utility	10%	3	3
Noise	20%	1	2
Nature potency	20%	1	3
TOTAL		12	16

From table above , the selected site is number 2 on BWK II region at Gajagmungskur sub-district Veteran Street

SWOT Analysis factors;

STRENGTH

The strength of this site is on the location, view and existing contour that support the library project. The site is easy to get by public transport, and private. The existing view can support the plaza concept of outdoor space and the contour which is hilly can be role as the playful landscaping.

WEAKNESS

The site is passed by secondary artery road which has a high mobility and can harm the acoustic factor of the library

OPPORTUNITY

The nature potency which can be seen on the vegetation that help the living of bio friendly environment

THREAT

Because of the high mobility, the site could be misses and therefore the library needs a trademark of the design and eye-catching appearance to be noticed

E. Site Approach related to Urban Heat Island Issue

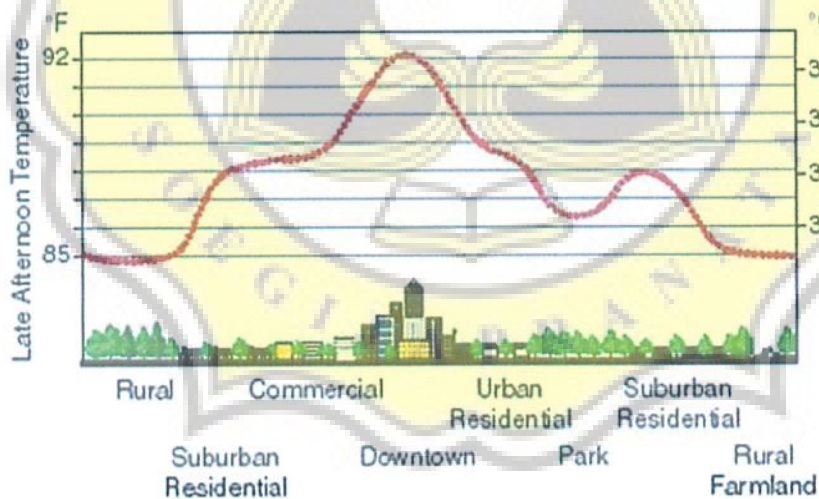
This research is aimed to how the wide vegetation affects the micro climate of Semarang environment. (see the 2nd chapter for further theory)

The survey approach to several roads in Semarang : jalan Dr. Wahidin, Sultan Agung, S. Parman, Veteran, MT. Haryono, DI Panjaitan, Thamrin, Pemuda dan Siliwangi.

Bound variable in this research is temperature, air humidity, air pressure and wind speed. The measurement of micro climate vegetation of the road corridor approximately 3-,9-35,4 degree celcius. Air humidity 43-61%, air pressure 756-761 mmHg dan wind speed 0,16-1,08 m/s.

Research shows the temperature difference ($p=0,028$) between corridor with vegetation in it and without. Linear regression test follows the vegetation with wide tree affected to wind ($\text{sig.F}=0,0028$) and major vegetation affected to air pressure ($\text{sig.F}=0,0043$) and wind speed ($\text{sig.F}=0,0332$).

Several ways to recover the micro climate can be done by adding the amount of wide trees and central park remains the high vehicle usage.



Cited: Pengaruh Lebar Tajuk Pohon dan jenis Vegetasi terhadap Pembentukan Iklim Mikro di Udara lalu Lintas Kotamadia Semarang.

S.Gunawan Widiyanto -G.101930531

(1999 - Skripsi)

1.6 Design Emphasis

A. Interpretation and Theory Elaboration of Design

In this Urban Library Plaza in Semarang project aimed to transform the space for reading into a social hub especially the urban with multiple responsibilities. The focus of the concept is to reexamine common library experience and incorporate a combination of personal and social cultivation, culture enhancement and entertainment. Urban Library plaza in Semarang is proposing attractive yet bold design – impressive building which acts as a gathering place and important cultural cluster.

This progressive library design was aiming to overcome issues of traditional concepts – individual organization and lack of complementing contents by redefining the image, proposing the dynamic space of cultural activation, information and place where all media forms are equally presented. Flexibility of vertically connected programs creates the impression of continuity of space while encourages socializing and knowledge sharing atmosphere.

Three semi-public spaces generate smooth transitional zone between the city and Library interior. The intension was to adjust the new building to the existing urban fabric of Semarang neighborhood. Being places of reference, libraries usually require outstanding and iconic design, which eventually could be in disharmony with the urban tissue it should be placed in. less aggressive approach –Urban library plaza is almost topography, articulating two different peeks connected with an organic and seamless continuous surface.

Semarang long tradition is reflected in selection of materials for the ceiling surfaces – woodpanels are chosen in order to provide warmer and more welcoming atmosphere of the Library.

Intriguing proposal for the Library was developed in open exchange library manner, significantly remove the current library paradigm that has been performing a closed personality of the building. The point of the issue is to break

down the paradigm into an open library which has a innovative experience to visitor and how the library can present an urban way of knowledge to every visitor. Reflecting this new concept urban library plaza into a new urban culture in Semarang.

For the purpose of this study, the following definition incorporates aspects of these various designations and characterizations and states the

Engagement between Indoor and Outdoor Space is:

Definition of Mass and Outdoor space

- **Mass** can be categorized into the form of building and vegetation. Both or individually can determine how the outdoor space being formed.
- **Outdoor space** is being form through the horizontal line of nature and the vertical border of building mass and vegetation.

Based on the activities occurs, the outdoor space can be categorized into:

1. **Active space** :the space is formed to aim to hold the human activities such as; plaza, playground and sport field, sidewalk.
2. **Passive space**: the space is created not to be used as human activities such as; passive park, conservation urban space.

Based on its function, the outdoor space can be categorized into:

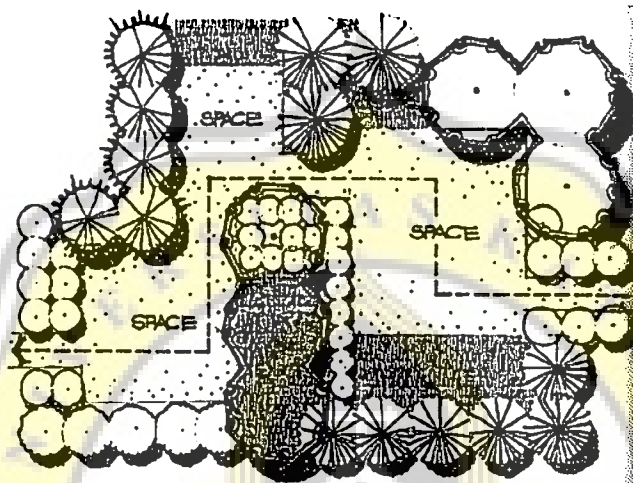
1. **Functional**; the outdoor space is created by certain functional approach; playing, exercising, transitional / waiting space, as border between each buildings, as building connector, distance-maker,
2. **Ecology** ; outdoor space has to concern on its ecology function, such as; air refresher (converting CO₂ into O₂), flood flow controller, rain water absorber, keep a certain ecosystem and create more mild flow onto building appearance.

A. **Creating Interaction between outdoor and Indoor space**

There are several factor that shows on how to create a outdoor-indoor interaction as follows:

- **Creating an outdoor space**

Create an outdoor space balance between the amount of hard material such as building mass, and the soft material such as vegetation.



PLANT MATERIAL USED TO CREATE AND LINK A SEQUENCE

Fig 3.60. Positive and Negative space

Source: sribd.com

- **Positive and Negative Space**

Create a positive space and negative space proportionally and properly based on its function and activities. Positive space created as a link between building mass to its function and activities in a clear and proper instruction. Negative space is a space that spontaneously created and it spread out in unclearly instruction.

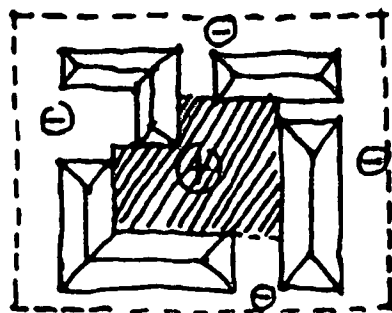


Fig 3.61 Positive and Negative space

Source : sribd.com

Create a positive space with a strong character in order to give a impressive enclosure. Positive space with a weak character by the mess forming. Positive space with spread out enclosure.

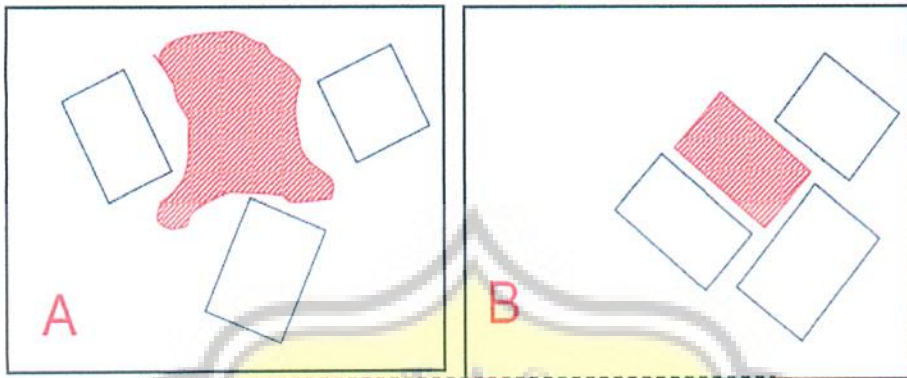


Fig 3.62. Positive space order
Source : sribd.com

Positive space A with weak character when the four corners open while Positive space B with strong enough character when the main opening placed only in one side while its corners ordered in overlap system to cover the mass corner.

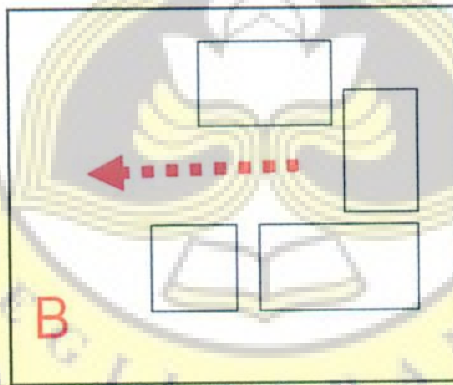


Fig 3.63. Positive with one side open
Source sribd.com

Definition of a "Positive Space"

Positive Space refers to an environment that is open and welcoming, as well as equitable and accessible, to persons of all sexual and gender diversities, as clients/patients, employees, health care providers, and volunteers. Grounded in the core values of HHS, Positive Space reflects the hospital's commitment to provide

ongoing education to staff regarding the issues around sexual and gender diversity, human rights, and resources.

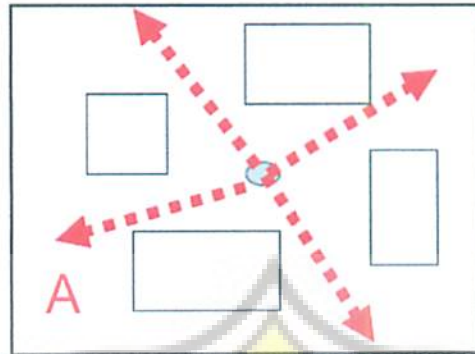


Fig 3.64 Positive space with overlap system
Source sribd.com

Death space is an unneeded space as its dimension and location is not suitable for any functional activities.

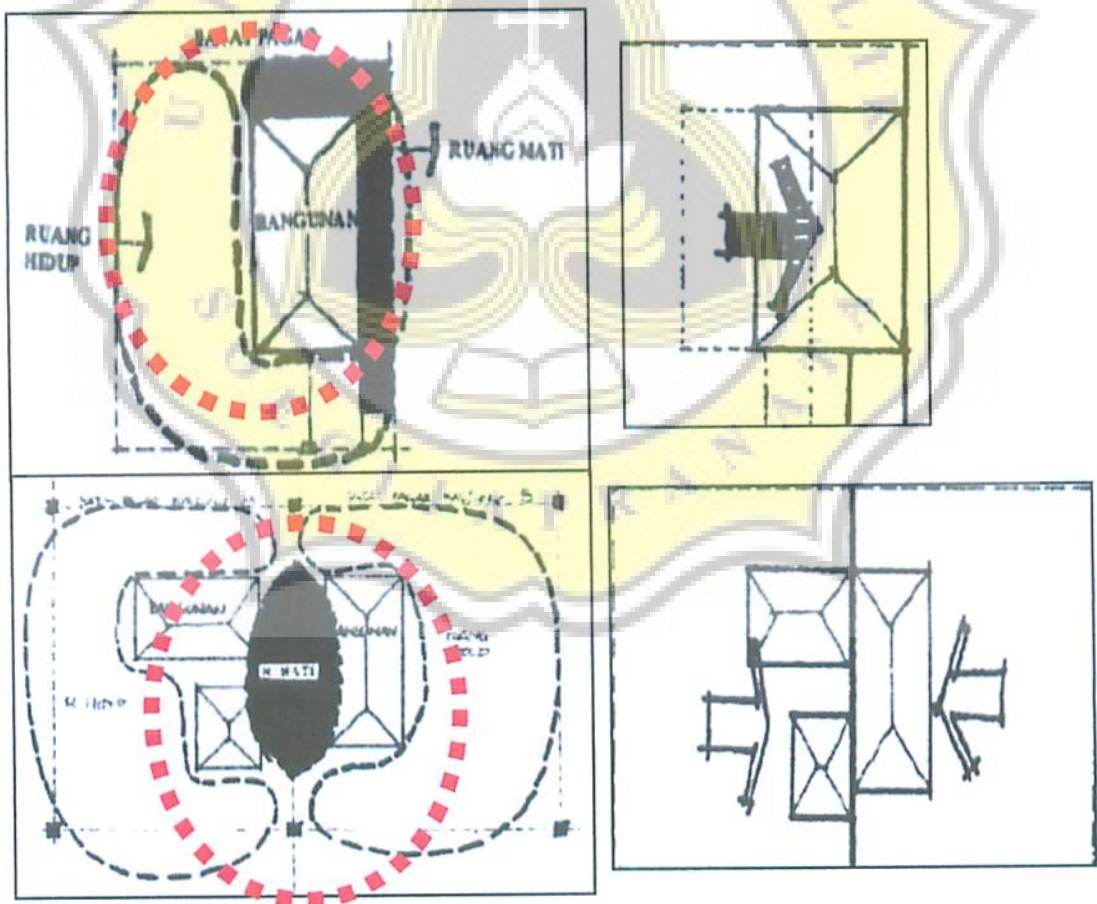


Fig 3.65 Deathspace
Source sribd.com

- **Mass organisation Forming**

Building mass in a proper order and space organisation to create a linkable outdoor space. Outdoor space A with unclear order. Outdoor space B with organized link.

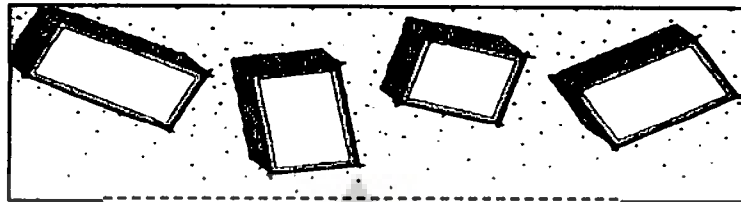


Fig 3.66. Outdoor space linear flow
Source sribd.com

Organized building mass will create a linkable path which make the outdoor space has organic linear flow. The advantage of it is dynamic variation in view.

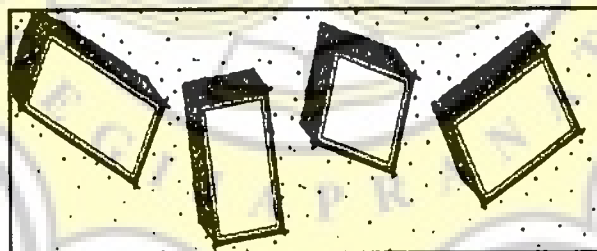
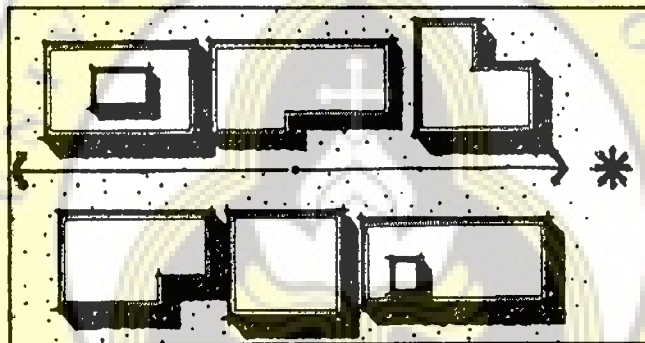


Fig 3.67. Outdoor space link
Source: sribd.com

Clear relation among the building mass with clear orientation. The mass order will barely shows its weak and disoriented building mass relationship.

Building mass organisation with relational order about 90° among each mass create a dynamic and varied form in zig-zag or forward and backward mass placing.

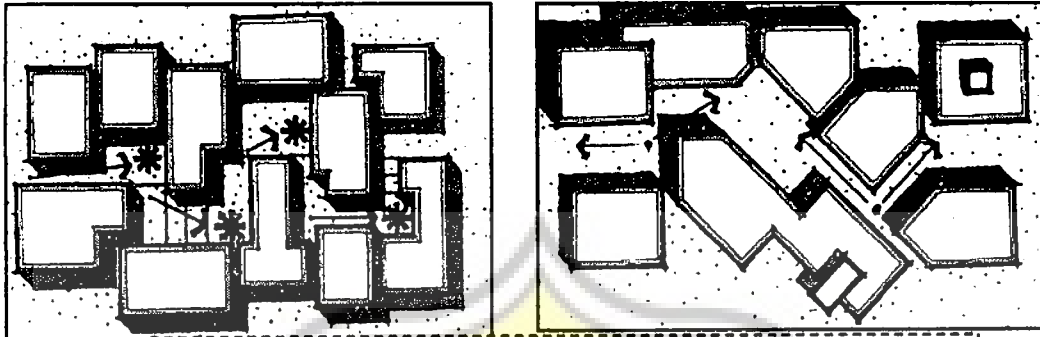
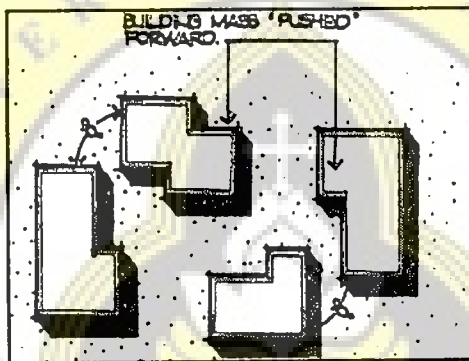


Fig 3.68. Indoor-outdoor space relation

Source : sribd.com



Building mass organisation with relational order about 90° with combination order more than 90° among each mass create even more dynamic and varied form in zig-zag or forward and backward mass placing.

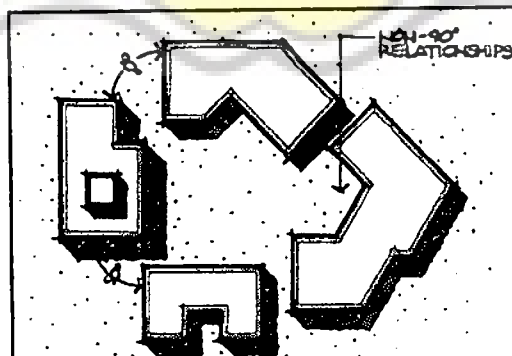


Fig 3.69 Indoor-outdoor space 90 degree relation

Source sribd.com

The building mass relation in cluster system will firmly formed by connecting form and line among each mass. Relation between the mass will clearly shown when it connecting through extend the imaginary building line especially on building façade .

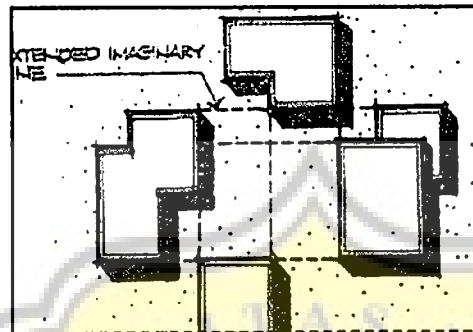
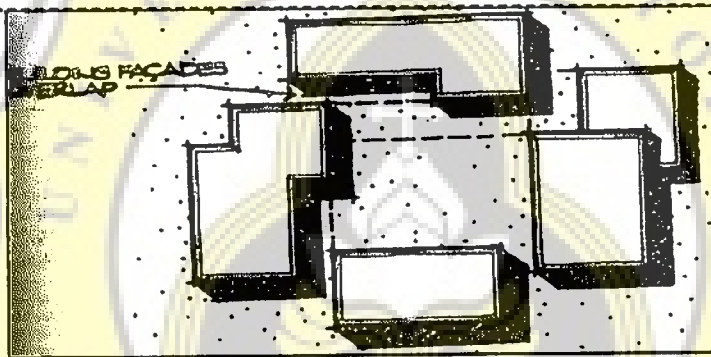


Fig 3.70.Indoor-outdoor space imaginary line
Source sribd.com



The building mass corner should not be in placed one point corner to avoid the pressure point of spatial and structural. Overlap system is recommended due to the exactcase.

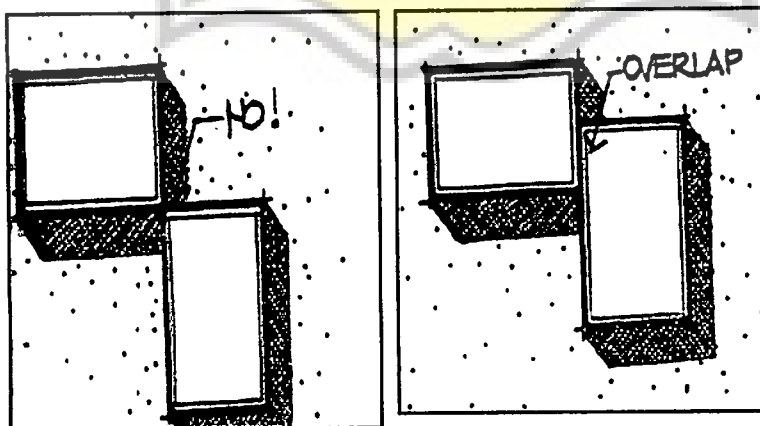


Fig 3.71.Indoor-outdoor space recommendoverlap
Source sribd.com

- **Engagement between Indoor and Outdoor Space**

Today's library is no longer merely a central repository for book storage and protection. The friendly climate of Semarang ,the Urban library and plaza breaks down the conventional borders between interior and exterior activities.

The plaza can be as much a place of learning as the library can be a space of engagement. The library of "Open Exchange" orientation is organized around a series of partially exterior spaces that traverse the building horizontally and diagonally and, like the plaza, turns indoor and outdoor relationships "inside out." These interactive spaces, collectively initiate both natural and artificial flows through the library.

a. Comfortable and fancy interior



Fig.3.72A sleek interior of book stacks of Seattle Central library, U.S
source:www.archdaily.com | December 2012



Fig 3.73The fancy lighting decoration at reading room of Seattle Central library, U.S
source: www.archdaily.com | December 2012

Each floor takes its visual design cue from the corresponding outside view – people, trunk, canopy, the city skyline, and clouds respectively. The focus is on how the interior would fulfill the needs of recreational feelings and create a great reading atmosphere with elegant interior managing. The truth of design can be shown by put the colum or structural material in a classy-finishing or fresh enclosure coating.

b. Outer spaces called Plaza

Another implementation can be seen on breathing architecture considered as concepts of open structures which embrace aspects of community and permeability of form in response to climate and nature low impact and less-energy The design would be a new paradigm, a large, dense, perforated urban object that achieves natural light and ventilation to all areas, despite its deep dimensions.

The integrating different functions of library and plaza have to create a harmony among each other. The indoor space has to become united with the outer one in comfortable way so the people wioul enjoy in everywhere they are. The circulation among each function has to be clear with a normal direction sign system or even a touch-screened directory booth.

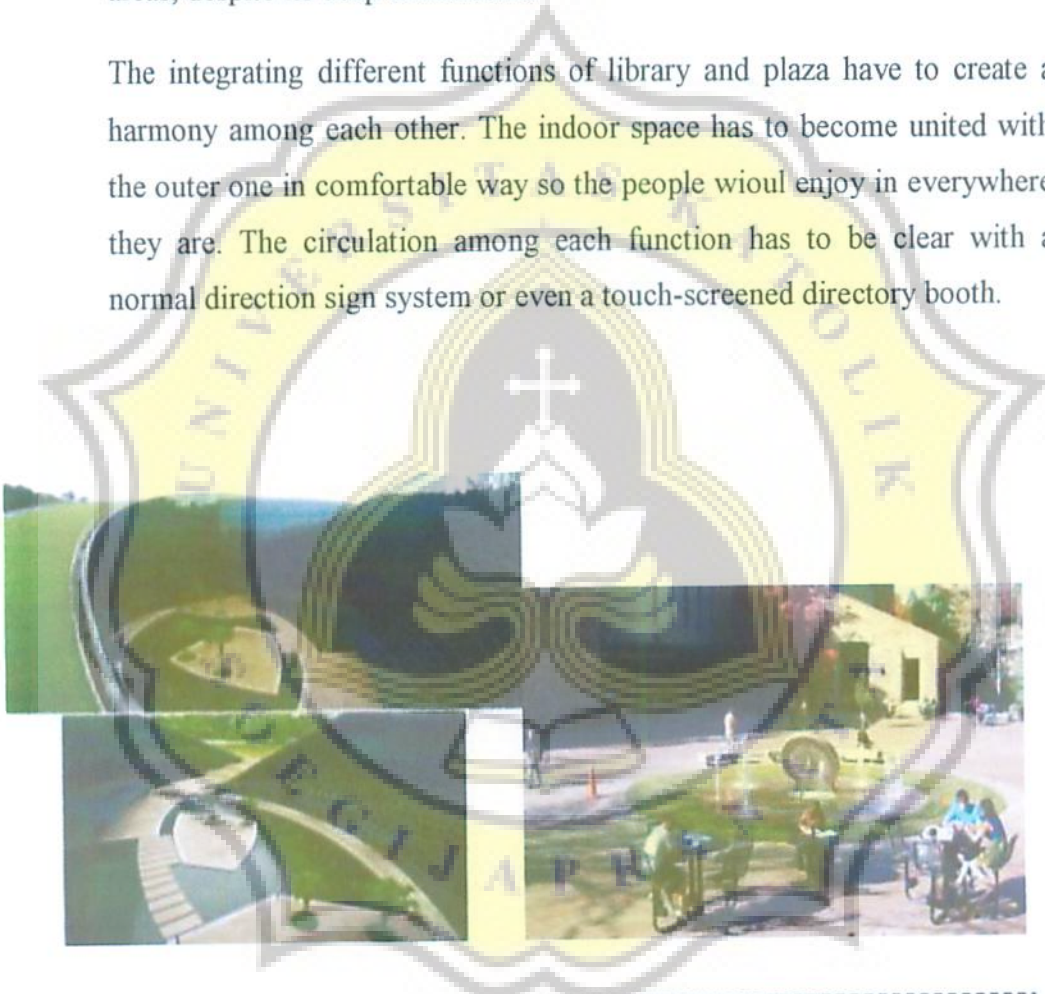


Fig 3.74 Sunken Plaza, Singapore
source: www.archdaily.com

Fig 3.75 Freemantle City Plaza
source: www.google.com

B. Possibilities and Design Theory Application

The engagement between indoor and outdoor space can be simply created on translucent wall or atrium as its central activities on hall or lounge.



Fig 3.76 The translucent wall support the engagement of indoor and outdoor spaces
left: Mansueto library, US right: UI library, Depok
source: left: www.archdaily.com | right: private docs

The Plaza as social hub provide an outdoor space that allow people to have gathering event and edutainment activities. Urban people concern on environmental issue. Regarding to urban Heat Island (UHI) issue plaza can be covered by plenty of large trees and bold vegetation as natural cover and shelter or pergola in order to reduces the outdoor heat. This place would be less energy to spend and reflects an active Semarang Urban people.



Fig 3.77 Freemantle City Library ,Australia
source: www.google.com

3.4 Framework

