

ARCHITECTURAL PROGRAM

4.1 Functional Program

4.1.1 Architectural Imaging

- Implementing a thought of integrating human behaviour on library, entertainment lounge and plaza performances.
- Modern style with urban flow dynamically shows the Semarang Urban character as the building facade.
- The public persona : Bold and impressive appearance
- The private persona : Calm, comfort and elegant interior and outdoor
- Landscaping concept of urban environment that put a high intension on integrating public space.
- Plaza as the social Hub that allow Semarang people to have gathering event and other social interactions. Due to make a new urban culture spot.

4.1.2 Design Function

The role of the library is changing and that the book collection is no longer the central focus. With advances in easily available electronic information and inter-library loans, providing the appropriate spaces for evolving library activities is now the priority. These activities range from the traditional research and education roles, to the need for libraries to become a point of connection and a gathering place in the community.

4.1.3 Design Goals

A. Urban people

- To create a new social hub that has a well-integrated facilities
- To provide a educative yet entertaining space on urban environment
- To increase Semarang Urban People interest on reading as ‘window’ of the universe and reflection of well-educated society

B. City of Semarang

- To add various tourism spot on education and entertainment spot
- To support Government campaign of reading and experiencing library towards Semarang people in all age range
- To create Semarang great image on concerning social issue and high intelligence civilization and urban culture development

4.1.4 Design Determinant

- a) User : the visitor and staff
- b) Activity : classification and character of activity
- c) Location: based on its function and activity needs
- d) Facility : the use of the project and inquiry of specific needs
- e) Design concept : design ideas of the project adjust to its environment and gives a legible creation

4.1.5 Design Requirement Factor

A. Architectural

The modern style library which give people a dynamic impression of urban character.

B. Structure

A library needs moduling order that support on bok shelving and create a spatial condition to create a flexible human and book loading movement.

C. Location

Location on its best condition of providing the urban character of Semarang on its surrounding to create an engagement between site and its neighborhood.

4.1.6. Calculation

(See the attachment)

4.1.7 Special space of the project

Public Locker deck is a subscribed locker with unilock password input to acces. The main function of public locker deck is to create a new way of exchanging message, important properties in small sizes. It is an alternatif way of urban people of Semarang to experience other way of commnication besides spend on time and consumtive behaviour on meeting in other public places. Facilities :

1. Storage cabinet with extra security staff and sytem such as anti-metal detector to avoid harmful material into the locker deck. Safe deposit lockers can be integrated into a vault room which is secured by a vault door for extra security
2. Security
3. Lobby with sitting bench

a. The Standard Size Of Locker Cabinet

Tb.4.1 Locker size

Safe Deposit Lockers	External section dimensions (mm)		
	Height	Width	Depth
8" module			
Module	521	813	600
Cornice	51	813	600
Separator & Pullout Shelf	25	813	600
Plinth	89	813	600
10" module			
Module	521	813	600
Cornice	51	813	600
Separator & Pullout Shelf	25	813	600
Plinth	89	813	600

source: www.barringtonsecurity.co.uk | March2013

b. Locker module and size

The locker deck will be placed in a10 row and 3 pcs in vertical. It can load 120 locker unit in 1 room deck.

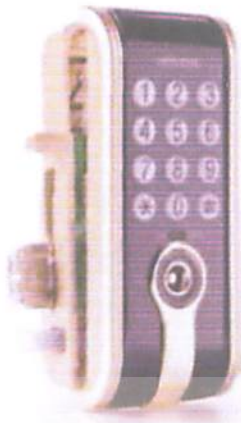


Fig4.1 Unilock securitypassword key
 source: barringtonsecurity.co.uk,
 march 2013

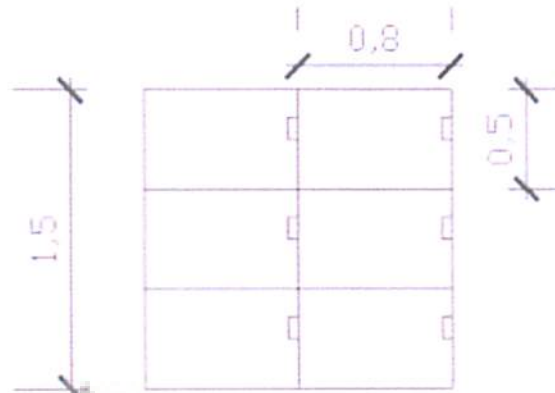


Fig4.2 Locker deck plan
 source: private doc.
 March 2013

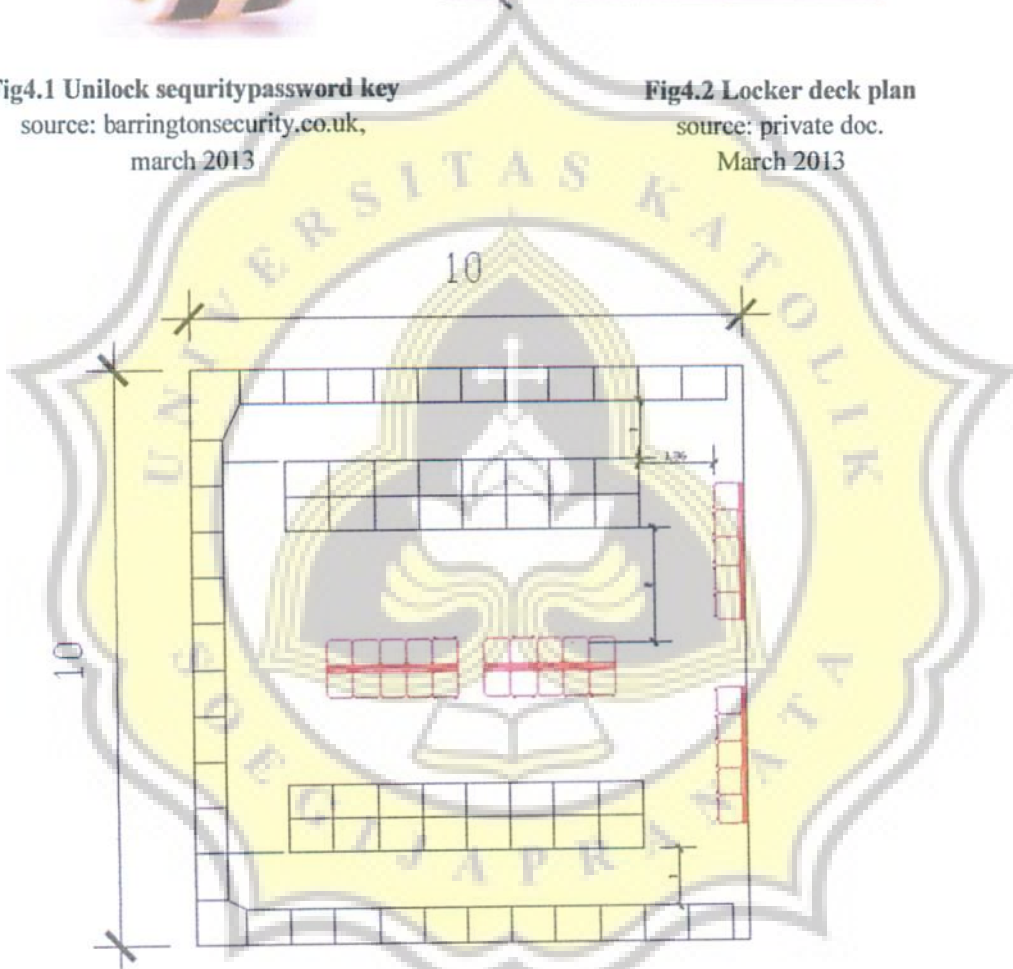


Fig4.3 Locker deck plan
 source: private doc.
 March2013



Fig4.4 Locker deck activities
source: archlibrary.com



Fig4.5 Locker deck visualisation
source: barringtonsecurity.co.uk

The locker deck as the new urban has to perform an urban character that will be dynamic, unique and efficient. Therefore the appearance has to represent an urban spirit, it will be placed in plaza area as the interaction between outdoor and indoor space.

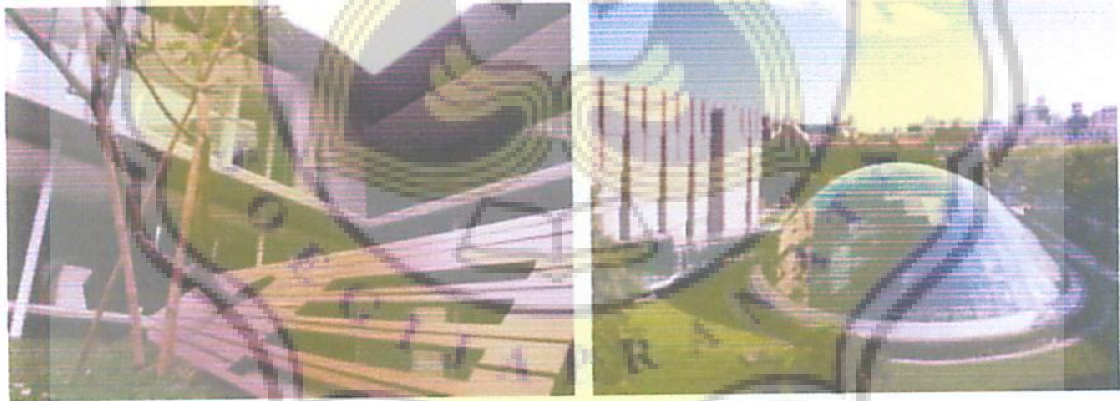


Fig4.6 Kindah office Jakarta hall buried meeting room
source: private

Fig4.7 Mansueto library buried hall
source: archdaily.com

Noted Source:

NAD : Neufert Data Architect

PDLB : Planning and Design Library Building by Godfrey Thompson

PPGPUW* : Pedoman Pembakuan Gedung Perpustakaan Wilayah

Survey : Universitas Indonesia, Perpustakaan Wilayah Semarang

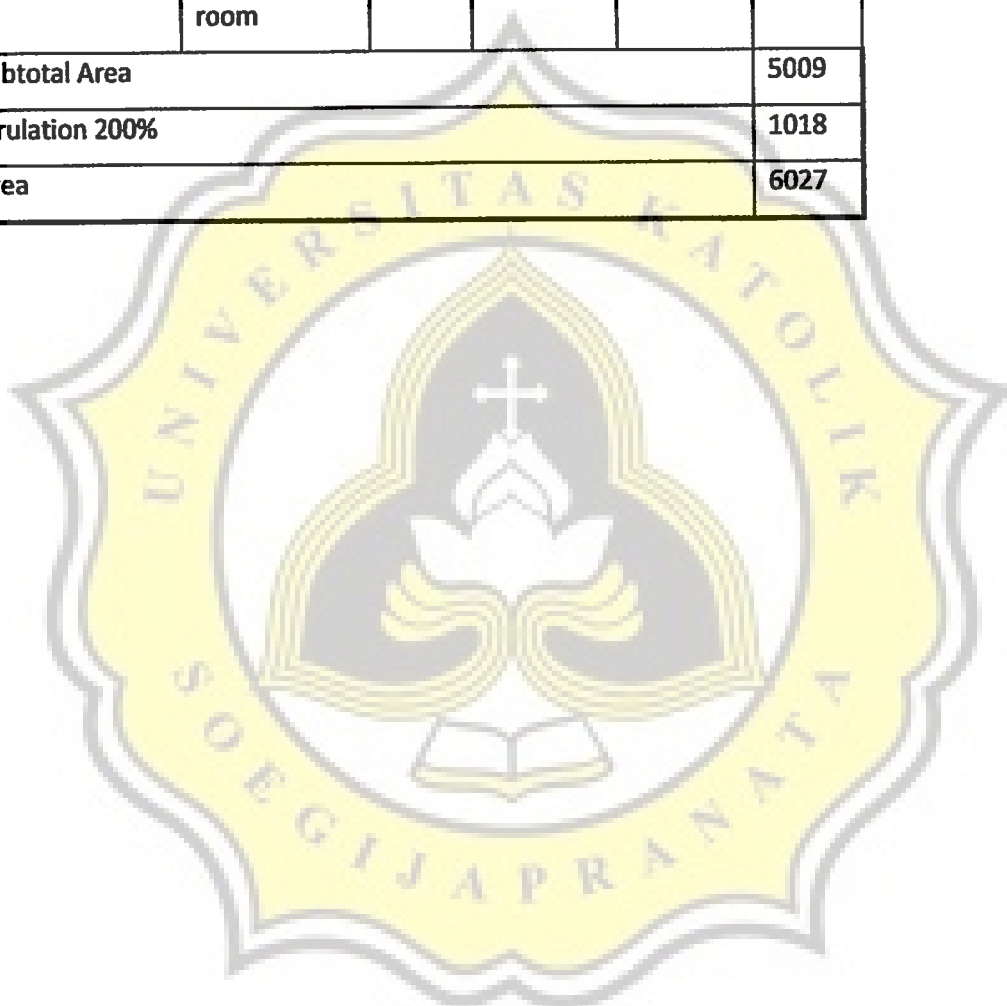
*The dimension calculation include the circulation.

Tb.4.2 Main Facilities : Library hall

LIBRARY HALL					
Space Program	Furniture	Unit	STANDAR per UNIT (m²)	Source	Area (m²)
Public library allows movement circulation about 3sqm per individuals					
Adults reading room 70%	Carrels	30	3.57	PDLB	107
	Small stacks	200	1.2	PDLB	240
	Large stacks	250	1.8	PDLB	450
	Reading table & seat	100	1.4	Survey	140
	Sitting lounge seat	300	1.8	Survey	540
	Reference	30		Survey	300
Double sided stacks Large 7shelves 4.5x0.4m with 135/m ² books Small 3x0.4m (Desc.)					
Children reading room 20%	Small stacks	60	1.2	Survey	72
	Large stacks	70	2	Survey	140
	Fun learning zone	2	48	Assume	96
	Sitting lounge seat	100	1.8	PDLB	180
	Reference	4		PDLB	14
Difable reading room	Stacks	100	0,36	NAD	36
	Reading desk	5	3,2	NAD	16
Digital	Search	10	0.54	Survey	5,4

information	engine booth				
	Computer desk	100	1.5	Survey	150
Multimedia room	Microreader	10		Assume	25
	Microfilm			Assume	8
	Listening booth	20		Assume	55
	Video			Assume	14
	Movie			Assume	20
	Catalogue			Assume	6
	Staff	3		Assume	7
Sitting	Chair	30	0,65	PPGPUW	33
Front desk	Registration	5		PPGPUW	21
	Locker room	6		PPGPUW	6,5
	Helping desk	5		PPGPUW	21
Lavatory	Urinary	4		NAD	13
	Lavatory	4		NAD	14
	Difable	1	2,5	NAD	2.5
Periodical room	Magazine	72		PPGPUW	140
	Newspaper	68		PPGPUW	133
Multipurpose room		50		HDIS	220
Gathering hall	Prepare room	300	10%	NAD	330
	Operator& staff			Assume	33
	Equipment		10%	Assume	4,5
	Stage		10%	NAD	33
Display		300		PDLB	
Kitchenette&Bar		40		NAD	72
Scan&Copy both		4 area		Assume	30
Catalogue room	Children	8		PPGPUW	25

	catalogue				
	Teen & adult catalogue	28		PPGPUW	70
	Reference	4		PPGPUW	14
Special collection	Deposit room			Assume	624
	Reading room	50		Assume	300
Subtotal Area					5009
Cirulation 200%					1018
Area					6027



Tb.4.3 Main facilities : Plaza

PLAZA					
Space Program	Furniture	Capacity	STANDAR per UNIT (m ²)	Source	Area (m ²)
Public Locker deck	Locker			Assume	100
	Lounge seat				
Sitting group	Individual seat	2	4	Assume	8
	Small group seat	10	12	Assume	120
	Gathering spot	20	20	Assume	400
Subtotal Area					628
Cirulation 100%					628
Area					1256

Tb.4.4 Supporting facilities : Lounge

LOUNGE					
Facilities	Requirement	JML	STANDRD per UNIT (m ²)	SOURCE	AREA (m ²)
Book store	Book store	1		Survey	396
	Stationery	1		Survey	
Cafe		1		Survey	670
Food Court & commercial retail		1			
Lavatory	Difable	1	2,5	NAD	2,5
	Urinary	4	1,02	NAD	13
	Lavatory	4	0,16	NAD	14
Subtotal Area					1095
Capacity : 200 org (@ 2 m ²)					400
Cirulation 100%					1095
Area					2590

Tb.4.5 Supporting facilities :Staff office

STAFF				
Space Program	Capacity	Unit	Source	Area (m²)
Head Library	1		PPGPUW	30
Vice	1		PPGPUW	30
Secretary	1		PPGPUW	7
Meeting room	50		Assume	110
Common	Manager	1	PPGPUW	16
	Authorize	1	Assume	4
	Logistic	2	Assume	28
	Audit	2	Assume	28
	Personalize	3	Assume	4
Annotation	Manager	1	PPGPUW	16
	Book tagging	2	Assume	20
	Classify	1	Assume	4
	Association	1	Assume	4
Bussiness	Manager	1	PPGPUW	16
	Schedule	1	Assume	4
	Finance	1	Assume	17
Creation	Manager	1	PPGPUW	16
	Publishing	2	Assume	4
	Update	2	Assume	4
	Assemble	3	Assume	4
Collection	Manager	1	PPGPUW	16
	Fumigation	1	Assume	20
	Provision	1	Assume	4
	Scan	1	Assume	4
Registry	Manager	1	PPGPUW	16
	Bookmark	1	Assume	4
	Registration	2	Assume	4
	Archive & manuscript	2	Assume	4

	Finance	3	Assume	4
Repository	Manager	1	PPGPUW	16
	Deposit	1	Assume	4
	Supply	1	Assume	4
	Preserve	1	Assume	4
Lavatory	Urinary	4	NAD	13
	Lavatory	4	NAD	14
Subtotal Area				456
Cirulation 30%				137
Area				593

Tb.4.6 Maintenance & Service

Maintenance & Service				
Space Program		Capacity	Source	Area (m ²)
M.E.	Genset		NAD	25
	AHU		NAD	25
	Control		Assume	10
	Operator		Assume	10
Loading Dock	Loading dock	3	NAD	50
	Storage AS/SR		Assume	200
	Fumigation room	1	Assume	25
Storage non-manuscript		5	Survey	40
First Aid room			Assume	12
Security		3	Assume	24
Musholla			Assume	50
Subtotal Area				471
Cirulation 20%				91
Area				562

Outdoor Space Inquiry

Staff : 80

Visitors : 3256

Assume there will be 3000 visitors , with private or public vehicle use as follows:

Car : 40% (240 @ 2,5x5m²) of user (600 people)

Motorcycle+bike : 40% (720 @ 0,9x2 m²) of user (1800 people)

Bus : 20% of user (600 people)

Parking lot inquiry:

$$\begin{aligned} \text{Area} &= (240 \times (2,5 \times 5)) + (720 \times (0,9 \times 2)) + 40\% \text{ m}^2 \\ &= (3.000 + 1.296) + 40\% \text{ m}^2 \\ &= 4.296 + 40\% \text{ m}^2 \\ &= 1.718 \text{ m}^2 \end{aligned}$$

According to Perda No.14 tahun 2011 tentang Rencana Tata Ruang Wilayah Kota Semarang Tahun 2011-2031 (City Planning)

BWK II divided into Candisari sub district and Gajahmungkur sub district has total 1.320 ha of area

Gajahmungkur Sub-district area of 251.535 ha

Kolektor Sekunder of Veteran Street

Educational sector

Building Coverage Ratio = 60%

Building Height 3-4 KLB 2,4a

Roj Lin 23 m

Area of selected site = 1,8 ha

BCR	= Building total Area : KLB
	= 10.742 : 2,4
	= 4475 m ²

$$\begin{aligned} \text{Ground Floor Area} &= \text{BCR} \times 60\% \\ &= 4475 \times 60\% \\ &= 2.685 \text{ m}^2 \end{aligned}$$

Wide Floor Area = Ground coverage max - Ground Floor Area

$$= 4.455 - 2.685$$

$$= 1.770 \text{ (3 levels)m}^2$$

Development Area as Plaza space inquiry

$$\text{(Open Space left) } 1.770 \times 100\% \text{ (Circulation on Plaza) } = 3.540\text{m}^2$$

$$\text{Outdoor Sitting group} = 528 \text{ m}^2$$

Total Space	= Ground coverage + Plaza + Parking Area
	= 4.455 + 3.540 + 1.718 + 528
	= 10,241 m² = 1.1ha

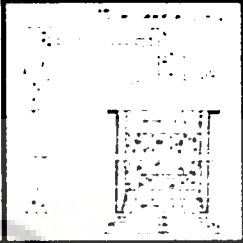
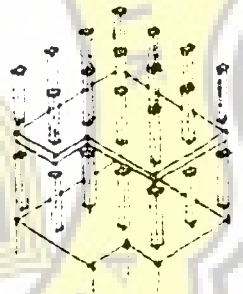
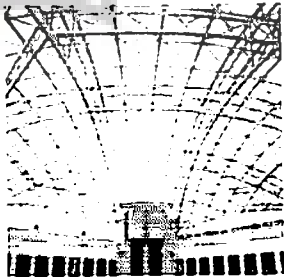






4.2. Detailed Functions Architectural Program






4.2.1. Structural Program


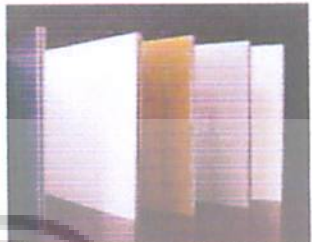


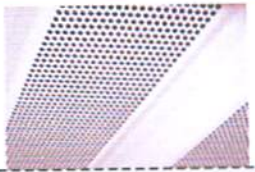
Tb4.7. Building structure and enclosure system

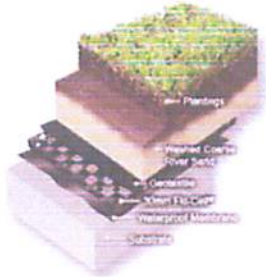
Source : private docs

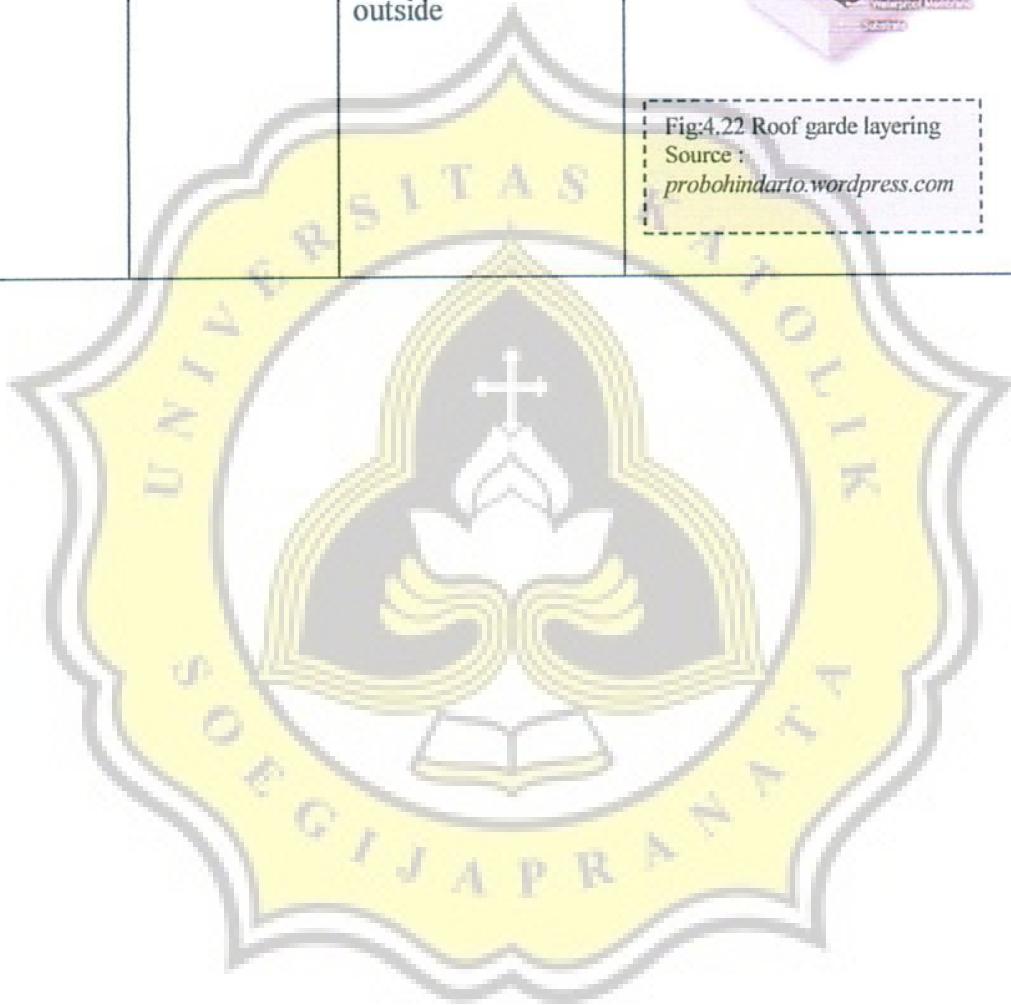
LOW STRUCTURE			
Foundation	<i>Coaisson</i>	The stucture of alluvial assosiation allow the coaisson to base deep firmly on its medium relief ground	 <p>Fig 4.8. : Coaisson Fondation Source : www.scribd.com</p>
	<i>Bearing wall</i>	As the narrow structure	
MIDDLE STRUCTURE			
	Skeleton	Skeleton structure helps the arrangement of column over the book shelving layout.	 <p>Fig 4.9: Skeleton structure</p>
UPPER STRUCTURE			
	Space frame	Space frame has an aesthetic value besides its firm structure use for spatial needs.	 <p>Fig 4.10: Space frame Source: scribd.com</p>

	Conventional truss	As the public service building with a large spatial needed, the upper structure has to cover up the upper part efficiently and thus the following structure which commonly use for library building.	 <p>Fig 4.11 Conventional truss Source:scribd.com</p>
	Roof garden	Besides its green factor, the roof garden can be used as a part of plaza, and other activities on it.	 <p>Fig 4.12 : Roof garden Source :www.akuinginhijau.org</p>
BUILDING ENCLOSURE			
Floor	<i>Hebel</i>	Hebel is economic yet a high stress load sustain and long durability time	 <p>Fig 4.13: Hebel Source:lulusoso.com</p>
	<i>Vinyl</i>	Most of library reading room use the vinyl floor	 <p>Fig 4.14: Acoustic floor (vinyl)</p>

	<i>Granite tile</i>	It has firm material and conditioned to be placed on high activity space	 <p>Fig:4.15 Granite Source:lulusoso.com</p>
	<i>Carpet</i>	It has a good sound insulation material that support the acoustic neds	 <p>Fig:4.16 Granite Source:lulusoso.com</p>
	<i>Wool insulation</i>	Floor to floor noise insulation	 <p>Fig:4.17 wool accoustic insulation</p>
	<i>Tactile floor</i>	Concerning in difabe (blind) people as each space signature.	 <p>Fig 4.18: tactile floor Source : www.ecvv.com</p>
Wall	<i>Lightweight block</i>	Hebel material is a good heat insulation, so it affect to the use of cooling energy.	
	<i>Gypsum</i>	Gypsum has a high flexibility	

			
	<i>ACP Panel</i>	Has a high flexibility and low maintenance which can support the dynamic appearance of urban building which has a modern style	 <p>Fig 4.19: ACP Panel Source: lulusoso.com</p>
	<i>Glass</i>	Glas wall with spider fitting frame to support the borderless interaction between the inside and outside of the building	 <p>Fig 4.20 : Glass Wall Source : www.brittexusa.com</p>
Ceiling	<i>Gypsum board</i>	It is flexible to set in various space which can be customize in aesthetic.	 <p>Fig 4.21: Gypsum panel Source: lulusoso.com</p>
	<i>Acoustical perforated-metal deck. / : Lay-in acoustical ceiling tile.</i>	The acoustical design issues for libraries involve the room acoustics considerations and	 <p>Fig 3.29 : Acoustical perforated-metal deck. Source : www.librisdesign.org</p>

		Sound isolation between various use spaces.	
Roof	<i>Roof garden</i>	Roof garden can be a good way to reduce the heat and sound while it rains outside	 <p>Fig:4.22 Roof garde layering Source : probohindarto.wordpress.com</p>



4.2.2 Utility and Technology system

Tb 4.8 : utility and technology system

Source :private docs

<p>Transportation system</p>	<p>Vertical Book& equipmet : Book elevater/dumb waiter User : Ramp, Stair Horisontal; Book& equipmet : Loading dock User : Connecting lounge, hall, breezeway</p>
<p>Electricity</p>	<p>The electric source of this project comes from Government Electricity Company with a solar energy as supportive energy source.</p>
<p>Clean water</p>	<p>Sistem Down - Feed Because of the multi level buildising, Clean wáter distribute from ground reservoir and pump up into a wáter tank, then it will be distribute down based on the faucet needs.</p>
<p>Sewage</p>	<p>Solvent (Lavatory/urinary, rain water, dishwater) Solute sewage from disposal activity flow imto the water treatment and the dishwater sewage flow into the Dense : septictank</p>
<p>Fire protection</p>	<p>Smoke detector Heat detector Fire Extinghuser Wet-pipe Sprinkler System Hydrant Box</p>
<p>Communication</p>	<p>Internal With 1 way communication speaker dan intercom for 2 ways communication Speaker External,by phone, faximile & internet</p>
<p>Lightning rod system</p>	<p>5. Faraday This is accomplished by surrounding the building in a kind of Faraday cage. A system of lightning protection conductors and</p>

	lightning rods are installed on the roof of the building to intercept any lightning before it strikes the building.
Litter	Divided separately into organic and unorganic. Organic for composting process, and unorganic to send into Laystall later to Municipal landfill
Building protection	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.
Security	For the loan issue within the library area: The high performance of Lib-Chip™ RFID tags The library area has some infrared area coverage, the moment the chip out the alarm goes on. Security staff will check out on each library boundaries. Chip has some sensor that connect to server Due to journalistic issue : The library use the Paper Misconduct Literature Check System (PMLC) which can sort any legal only e-journal/ references for protect the copyright The BMI anti-theft system is a new state-of-the-art high-tech electronic unit exhibiting innovative operation and with extremely high detection rates.
Special Technology requirement	Wi-Fi technology that visitor todo data browsing wirelessly over high-speed Internet connections. Automated storage and retrieval system (ASRS or AS/RS) use for book storage. It is the latest technology of staff and space efficient. The AS/SR would be directly connect to fumigation- storage- loan division

4.2.3 Building performance

Tb. 4.9 : Building performance

Source : private docs

Natural lighting	<p>Daylighting (using glas wall, windows, skylights, or light shelves)</p> <ul style="list-style-type: none"> ▪ Avoid sun glare by using material with low reflection, and sunshading ▪ Space orientation which adjust the sun path
Artificial lighting	<p>Library needs 200-00 lux (see the attachment) which It comes to high energy lamp such as LED to cover the lighting needs</p> <p>General lighting for reading room, collection stacks, audio room</p> <p>Down light use for meeting room</p> <p>Task Light/spot light use for lounge/ display hall</p>
Ventilation system	<p><u>Mixed Mode Ventilation or Hybrid ventilation</u>: utilizes both mechanical and natural ventilation processes</p>
Natural ventilation	<p>Natural ventilation with cross ventilation sytem use for open reading room, outdoor reading room</p>
Artificial ventilation	<p>Artificial ventilation take important role on keep the organic material of book that tent to have non-fluctuative air condition</p> <p>Central Air Conditioning sytem use for library hall, reading room, lounge, AS/SR storage</p> <p>Split AC use for staff room, gathering hall</p> <p>Exhaust fan use for kitchenete, cafe, food court, fumigation room</p>
Acoustic	<p>Reading activity need a low noise criteria.</p> <p>Sound lock material system that generally use the noise arbsorber and acoustic insulation such as:</p> <p>Acoustic wool insulation for floor and wall sstem : gathering</p>

	<p>hall, adult reading room</p> <p>Acoustic perforated-metal deck./ use for ceiling tile in all over reading area.</p>
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4.2.4 Environment

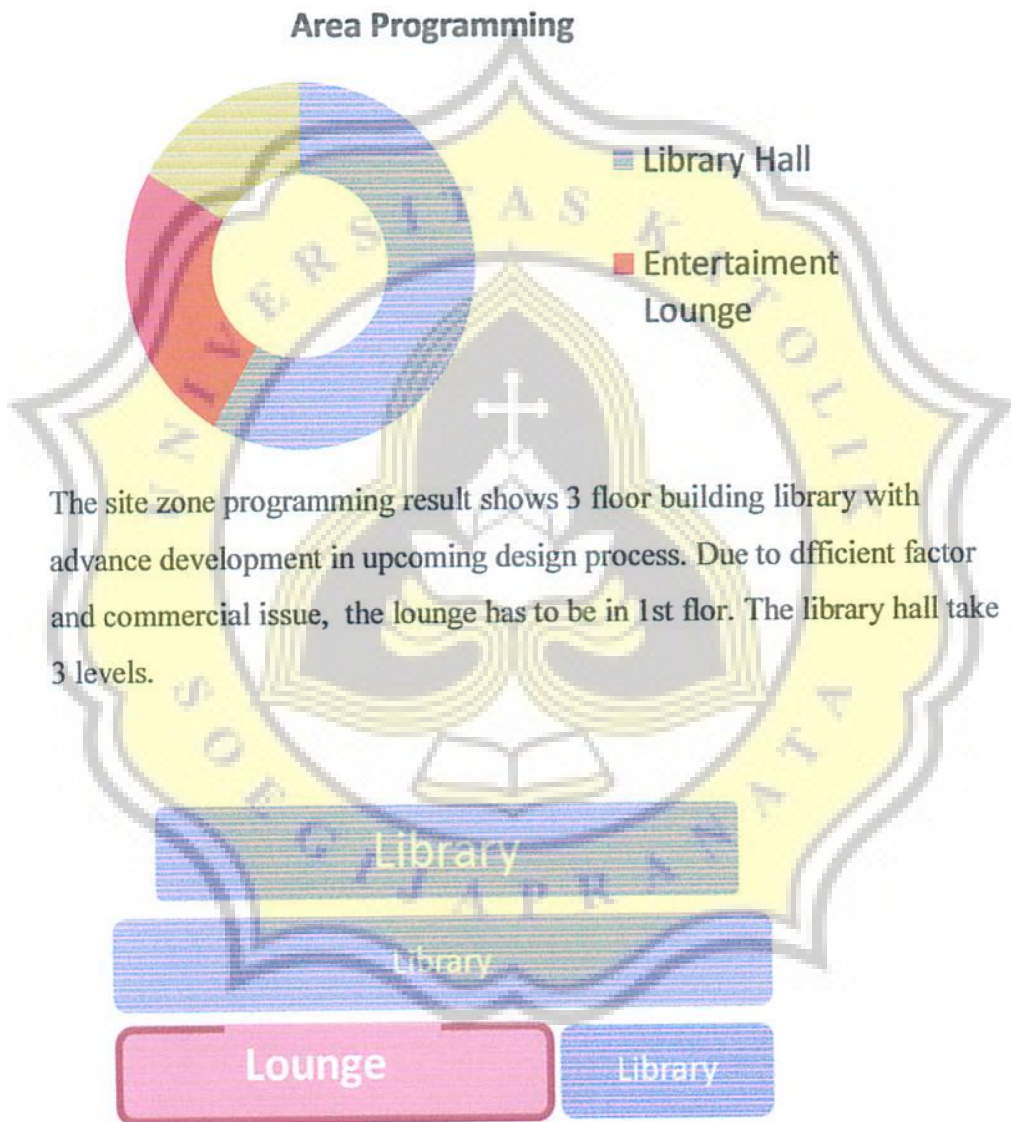
Tb. 4.10: Environment program
Source : private docs.

Landscaping order	<p>Grass block : use for remaining plaza which can be use as rain water treatment</p> <p>Tactile tile for the blind on walking track</p> <p>Custom stone river use for palm teraphy</p> <p>Paving block for walking tack and sitting group</p>
Vegetation	<p>Plaza as the social hub surely has a comfortable outdoor space that keep people to stay in a long time for gathering and reading.</p> <p>For the heat barrier use of huge tree with enormous number of leaves : mahogany tree</p> <p>Plaza main vegetation surface: rumput jepang, rumput gajah mini</p> <p>Basin vegetation : Mormon tea, sagebrush, lemongrass</p> <p>Garden flower : Bleeding heart, orchid, roses, sedap malam flower</p>
Sitting group	<p>Sitting group as part of the outdoor Plaza which can be placed on a group of seat/ garden furniture or on the garden roof.</p> <p>Visitor can seat freely on the grass as long its the part of Plaza</p>
Trash can	<p>Trash can would be in a set of 2 cans. Organic and unorganic.</p> <p>Each trash can would be placed within 10m away from each other for the hygine issue.</p>
Rain water treatment	<p>Biopore for the rain water</p> <p>Rain harvesting system for the lavatory flush use/ park watering</p>

4.2.5 Area Programming

The Total Area (that covered the ground of the site) of Urban Library Project s divided into 3 highlight function: Library hall 58%, Entertainment lounge 25%, and Plaza 17%

Dia. 4.1.: Area Programming
Source : private analysis



Dia. 4.2.: Vertical Area ProgrammingPlan
Source : private analysis

