URBAN ACUPUNCTURE

HINA ABID

A Thesis Submitted in Partial
Fulfillment of the Requirements
for the Degree of

Bachelor of Architecture

Department of Architecture
Montfort Del Rosario School of Architecture and Design
ASSUMPTION UNIVERSITY
2016

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Since urbanization the built environment and urban areas have exploded at an unprecedented rate. Where we once evolved and developed in natural settings, today we spend over 90% of our time indoors with no natural surroundings.

Biophilic design aims to bridge the gap between nature and the built environment, and fulfil the longing that human have to be immersed in the natural environment. This thesis examines biophilia, the theory that we are innately and evolutionarily programmed to respond positively to nature, and that maintain this connection is crucial to human health and well-being.

This thesis will explore and emphasize. Key research of biophilic design, and implement how it can go beyond green design and along with the programme help reduce stress and increase productivity, creativity and improve overall health in urban cities.
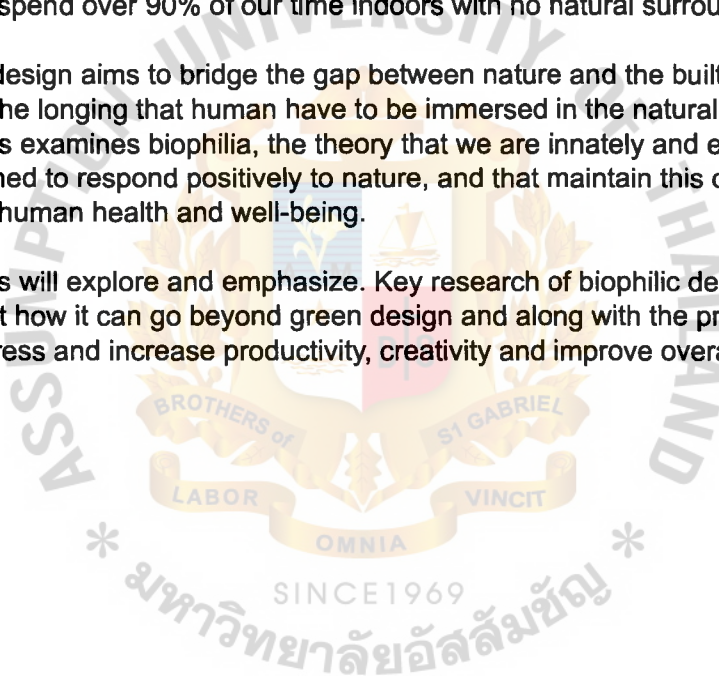
Thesis approved:

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Date   Assoc. Prof.Pralong Phiranada , Dean

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Date   A. Suparath Valaisathien , Chairperson

_____
Date   A. Tanakorn Meennuch   , Thesis Advisor

Acknowledgement

I would like to express my appreciation to my thesis advisor Ajarn Tanakorn for guiding me through my thesis. Without his valuable guidance and support , this thesis would not have been possible.

I would also like to thank my family and friends for constant support and helping me finish this thesis.This thesis would not have been accomplished without everyone's support and advice.

Hina Abid

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Chapter 1: Thesis Introduction

1.1 Background of Interest

"Study nature, love nature, stay close to nature it will never fail you."

Frank Lloyd Wright[1]

After the arrival of modernism and the growth urbanism, modern homes and high rise habitats replaced gardens. Fast growing populations and changes in lifestyle contributed to the destruction of garden cities (Samiei, 2012).[2]

With rapid urbanization the cities displayed a separation between nature and human activities unlike pre modern times when human settlements either integrated or coexisted peacefully with nature.

Urban dwellers have become increasingly disconnected from nature, so that nowadays many of us no longer understand the connection of a healthy ecosystem and healthy cities. Landscapes on and around our buildings and infrastructure can be more than an optional ornamental extra but a multi-functional layer of soil and vegetation that controls surface water, provides food and wildlife habitat and keeps us cool, fit and sane.

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[1] "Frank Lloyd Wright Nature Quotes," QuoteHD, , accessed January 20, 2017, http://www.quoteh e-it-d.com/quotes/frank-lloyd-wright-architect-study-nature-love-nature-stay-close-to-naturwill.

[2] Kaveh Samiei, "Architecture and Urban Ecosystems: From Segregation to Integration," The Nature of Cities, May 26, 2013,

Ecosystems provide our basic human and social needs. The biosphere nurtures our mind and soul, as well as our stomachs and lungs. The modern city is organic process, but one with an unhealthy bio system. The biophilia hypothesis suggests that humans have an innate tendency to affiliate with other living organisms and living processes. Humans require contact with a biodiverse world to stimulate the development of their emotional, cognitive, and social potential. As the living community of other organisms is reduced and human interaction with that community is lost, there is an extinction of experience that results in a loss of real ecological knowledge and emotional attachment to nature

Architecture and buildings are inseparable parts of a city; can you assume a city without architecture, buildings and their features? The biggest portion of built environment is building blocks and their attachments; how can imagine a sustainable and ecological city without the effects of architectural design and building constructions? Particularly in modern and semi modern cities today, the dominance of buildings against natural environment is undeniable.

As parks being the major green space in urban cities. Parks are considered important determinants in the quality of urban life. For example, according to Sideris (1995)[3], urban parks are valued by the public for several reasons, especially for their ability to satisfy the recreational, leisure, and social needs of urban residents. Additionally, urban parks provide visual and psychological relief in high density urban areas

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[3] Main, Kelly Diane. Place attachment and MacArthur Park: a case study of the importance of public space in an immigrant neighborhood and the implications for local planning practice. N.p.: n.p., 2007. Print.

In addition, urban parks influence park users' lifestyles by providing a venue for social communication, physical activity, and recovery from psychological stress.

"I believe very strongly that the cities that pay attention to quality of life will be cities that thrive in the 21st century trees, flowers, a small park, or even a side walk bench can soften the rough edges of a city calm your nerves and make you feel a little more in control of things (park) are essential building blocks of strong neighborhoods."

David Miller 2009[4]

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[4] David Miller, "David Miller, Democracy's Domain - PhilPapers," David Miller, Democracy's Domain - PhilPapers, 2009, , accessed October 10, 2016, https://philpapers.org/rec/MILDD.

1.2 Issue of Interest

Due to rapid urbanization and increased population density in Bangkok has led to decreased open and green spaces in the city which is leading to the environmental and health issues in Bangkok. Green spaces in the city are essential for physical, mental and social needs for refreshment and development of people living in the cities.

Lack of space and land scarcity has also led to smaller living spaces and hence the need for more public space for recreation has increased.

1. How to rebuild the relationship between human and nature through a unique interpretation of public spaces in urban cities.

2. How to integrate nature with architecture without the stereotypical way of putting green with in architecture.

3. How to increase green space with the help of architecture.

4. How to design public recreational facilities with green spaces for people to understand the importance of green spaces in the urban cities

1.3 Objectives of Proposal

1. To provide urban recreational facilities with indoor and outdoor spaces by providing a flexible harmonious experience

2. To integrate nature into architecture

3. To increase green spaces with help of artificial topography with architecture

4. To provide urban green living room for people to enjoy recreational activates

1.4 Hypothesis of Proposal

A new typology for urban parks which helps increase green space and recreational facilities with the help of artificial topography with architecture in a limited space. And designing spaces for recreation that help in physical mental and social well-being of people.

1.5 Thesis Statement

A space that has restorative effect and that stimulates experience, activities and interaction between user, nature and architecture.

Chapter 2: Literature review

2.1 literature

2.1.1 Rethinking urban parks

Public space and cultural diversity

Setha Low, Dana Taplin and Suzanne scheld

Parks are public spaces and there is cultural diversity in parks users and programs. Within the different cultural groups they have different thinking and different need. During the park movement when they started making parks for aesthetics of the city they were pretty but empty of people. Hence the need and importance of recreational facilities within the parks. Author concludes that "parks is and should be place for healthful recreation for all ages and classes and recreation is always an important park value and presence of other values makes the landscape of the park purposeful and users considerably richer"[5].

Environmental issues in urban cities are making even architects urban planners to think how to make green cities and parks being the major green spaces in the city and also a place for healthful recreation should become an important factor in urban cities. Health issues in urban cities are dependent on the environmental issues of the cities. But just adding more green space and parks with trees don't help in health of people designers and architects need to think how it could become beneficial for the people. And how Amanda Burden a director of New York department of city planning in ted talk talks about the public spaces and its needs of being designed properly how it should be planned properly that people actually can come and use those spaces. If

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[5] Setha M. Low, Dana Taplin, and Suzanne Scheld, Rethinking urban parks: public space & cultural diversity (Austin: University of Texas Press, 2005). 311

you build a green park with nothing in it would be too intimidating for people to go in you need to provide benches facilities to enhance the beauty of the place for people to want to use it.

2.1.2 THE POWER OF PLACE

Winifred Gallagher

Our environment influences thoughts, emotions and action. How we experience the world. How the authors writes in her introduction "throughout history, people off all cultures have assumed the environmental influences behavior. Now modern science is confirming that our actions, thoughts, and feelings are indeed shaped not just by our genes and neurochemistry, history and relationships, but also by our surroundings."[6]

The author's gives and incredible example of the mother and baby inside her womb. How the babies place inside the place has its advantages and problems too. How mothers psychology her physical acts affects the baby inside. The recent animal research, shows that at least one sort of psychological experience stress can have lasting effects on a pregnant female's offspring.

And also humans are visual creatures and idea of visual affects a lot. The concept of color with human brain and emotion. How warm colors are said to stimulate us and cool colors calms the nerves down. "The origins of the influences of light on our activity are rooted far back in the evolutionary past," Gallagher writes. "Because it

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[6] Winifred Gallagher, The power of place: how our surroundings shape our thoughts, emotions, and actions (New York: Poseidon Press, 1993), 156.

changes through the course of the day and the year in such a predictable way, sunlight is an ideal stimulus for the synchronization of our biological rhythms."[7] Along with Light and dark the cycle of hot and cold also are the basics to human lives and how the weather also affects human emotions. How cloudy or rainy days are said to be such a gloomy day. Place surrounding environment has a lot of effect on our thoughts and behavior. How even the room is set up also has an effect on us. Biomed research internationals clinical study clearly shows how the environment effects on our health and out actions and behavior. They studied patients by putting two sets of patient in different environment one in park and other in urban streets. Patients study for a week walking in different environments. The results showed that Patients HR recovery increased who walked in park. Also the patients walking in parks increased the tolerance in exercise and their duration of exercise increased. Living in different countries I can really relate to it and understand and agree to this theory of power of place. Environment has a huge impact on how we behave we think and our emotion.

2.1.3AIA's design and health initiative

The design and health initiative is launched due to the increase in the health issue in the urban cities which is due to the environmental issues. The health issues from asthma, obesity, diabetes, depression, a growing body of practice based evidence is clearly demonstrating the profound impact that forward-looking design decisions can have on human health for individuals and communities.

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[7] Winifred Gallagher, The power of place: how our surroundings shape our thoughts, emotions, and actions (New York: Poseidon Press, 1993), 231.

The architects are improving the health outcomes for people and communities and enhancing the well-being, safety and environmental quality with collaborations with health professionals, policy makers and organizations.

In 2014, they came up with six evidence-based approaches designers can use to promote health and Well-being:

1. Environmental quality: Preventing, mitigating and reversing chemical and microbial pollutants that harm public health

2. Natural systems: Utilizing natural forms, diverse species and existing ecosystems that relieve stress, accelerate recuperation, encourage healthy eating and promote physical and social activity

3. Physical activity: Encouraging exercise, recreation and other daily activities that lower the risk of cardiovascular disease and other health problems

4. Safety: Reducing accidental injury and crime to remove impediments to physical activity and alleviate anxiety and stress

5. Sensory environments: Diversifying the touch, smell and acoustics of an environment to promote safety, improve physical, mental and emotional well-being and enhance quality of life

6. Social connectedness: Strengthening personal and professional relationships and encouraging behaviors like civic participation to increase happiness and ensure communities function more effectively[8]

All these approaches are also the idea of human and place and how architects with their design can actually change their behavior build better environment for better

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[8] "AIA's design and health initiative," AIA, , accessed January 22, 2017,

http://new.aia.org/pages/3461-aias-design-health-initiative.

health of the people. And especially these design approaches should be important factor of designing public spaces like recreational parks.

2.1.4 Healthy parks Health People

The state of the evidence 2015

Mardie Townsend, Claire Henderson-Wilson,

Elyse Warner and Lauren Weiss, School of Health and Social Development,

Deakin University

Everybody needs beauty as well as bread, places to play in and pray in, where Nature may heal and cheer and give strength to body and soul alike

– Muir[9]

Nature's goods and services are the ultimate foundations of life and health. The quality of the air we breathe, the water we drink, the food we eat and many other features of the natural environment play a significant role in human health outcomes. According to the World Health Organization. Approximately one-quarter of the global disease burden and over 80 per cent of the diseases and injuries they monitor are affected by modifiable environmental factors. Such factors relate primarily to environmental degradation.

The importance of parks for physical health

Parks help in physical health of all ages. Providing more spaces for physical activities indoor and outdoor and there are studies that show residents of areas with recreational parks were 3 times more active than the residents of area with no parks.

The importance of parks for mental health

Urban living has been identified as a key factor in stress and mental ill health. Green

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[9] Muir, John, and Galen A. Rowell. The Yosemite: the original John Muir text. San Francisco: Sierra Club Books, 1989

spaces in the parks have the ability to reduce stress and improving mental health in people. Even there are studies providing just view to green helps in human health

  The importance of parks for social health

Some authors have suggested that 'social health in city neighborhoods may be deteriorating because modern urban planning and design has in many cases failed to adequately provide for attractive public spaces for residents to gather, interact, and develop relationships'. Therefore, parks and other green spaces are vital for promoting social cohesion and social capital in urban communities

Parks are not just green and open spaces but they are spaces that provide for recreation and social interaction. They are places that provide to get away from the urban lifestyle and provide for better mental physical and social health of people but the programs and facilities need to be thought out for which can provide for betterment of people in urban cities.

2.1.5 Public space in Bangkok

Commoners in search of a commons

"WHO wants a park?" This is meant as a rhetorical question, one that has been put to Mr. Jatuporn Tansirimas, a 39-year-old project manager in web design, and his friends quite a lot lately. He gets this response, he thinks, because he has been campaigning for something that would typically be left to Thailand's kings to grant, rather than for any of its businessmen, politicians or ordinary citizens to bring about themselves.

How Bangkok has been recognized as one of the most visited city and hence ought to have a new park that should be equivalent that to of New York central park. And this all started when Mr Tanasrimas friend caught a Glimpse of the vast patch of green in the Makkasan area.

Since then the idea of turning Bangkok's last remaining open space into park became a movement. And made an organization they call makkasan hope. Bangkok being filled with multi-cultural people mix of nationalities there are a lot blogs forums talking about the need of more green spaces basically parks in Bangkok. And according to the world health organization green space per person should be 9sqm but Bangkok has only 3.3sqm. Scientists studying Bangkok's thermal environment have found that the average surface temperature in the region of greater Bangkok stood at 26.0° in 1994. By 2007 it had risen to 37.8°, and by 2009, the most recent year available, to 39.8°.

This whole idea of Makkasan hope of keeping the green space is due to the environmental issues in Bangkok and the health issues leading from the environmental issues. There is a study that 1 Acre of trees can absorb carbon dioxide produced by driving car 11000 mile.

Green spaces have the power of filtering air pollution, attenuate noise, cooling temperatures infiltrate storm water and replenish groundwater. And it also helps in improving people's health. Residents with greenery are found to be three times more active than the residents without greenery. How Mr Tansirimas thinks Bangkok also needs something like a public "space where you don't have to spend money. Where will our children grow up—in department stores?"[10] Green spaces help children to stimulate imagination and help in education.

2.2 Case studies

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[10] T.J, "Commoners in search of a commons," The Eco

2016, http://www.economist.com/blogs/banyan/2013

Figure 2.1 Olympic Sculpture Park, source;

Weiss/Manfredi Architecture, *Seattle Art Museum*:

Olympic Sculpture Park

2.2.1 Olympic Sculpture Park

Architects: Weiss/Manfredi Architecture/ Landscape/Urbanism

Location: Seattle, Washington, USA

the design for the Olympic Sculpture Park capitalizes on the forty-foot grade change from the top of the site to the water's edge,

The land for the Olympic sculpture park was divided in three parts by the infrastructure road and rail line. But with the help of architecture and artificial topography with land fill they connected the three lands and made a park connecting the site back to the water front and it's not just landscape but it also provide indoor exhibition space as well as indoor and outdoor event spaces and also providing café and other facilities for public

It is accessible for all public space

It is connective

Sculptural

Has topographical impact

Has rain water collection
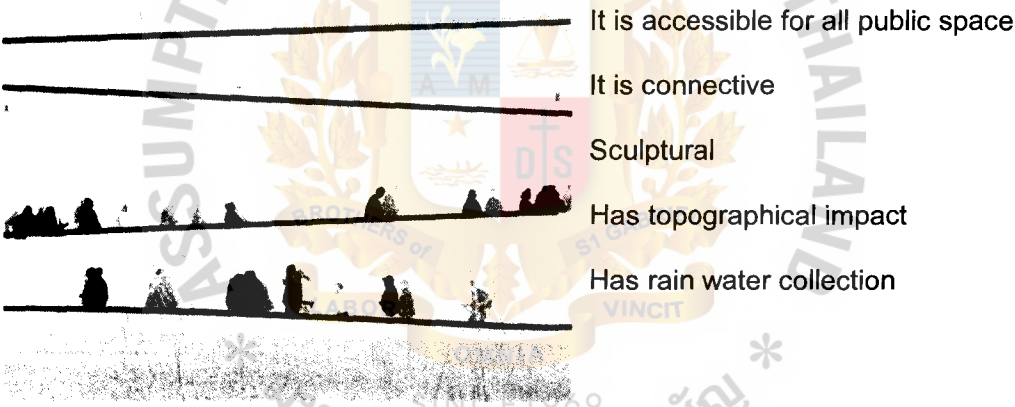
Figure 2.2 User movement, source; Weiss/Manfredi Architecture, *Seattle Art Museum: Olympic Sculpture Park*
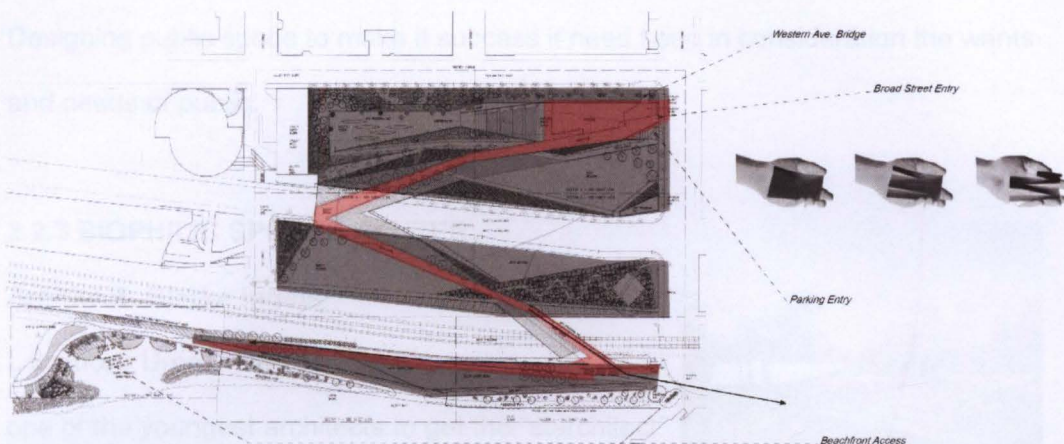
Figure 2.3 Building as diagram, source; Weiss/Manfredi Architecture, *Seattle Art Museum: Olympic Sculpture Park*

2.2.2 A8ernA

Architect: NL Architects,

Pieter Bannenberg,

Walter van Dijk,

Kamiel Klaasse

Location: Koog aan de Zaan,

Zaanstad, The Netherlands

Figure.2.4 Arial map,source; Pieter Bannenberg, Walter van Dijk, Kamiel Klaasse, *Architonic*

This project is an attempt to connect the two sides of town that got split up by the high that got built and the space under the highway that is 16m height and is unused is tried to be used by this project and it won 1st prize for European public space. It was a successful public space because they asked the

community itself what they wanted and was required and designed according to that. Designing public space to make it success it need keep in consideration the wants and needs of public.

2.2.3 BIOPHILIC SPORTS CENTER

Architect: Bjarke Ingels

Location: Umea, Sweden

one of the youngest architects to get the "starchitect" label, is creating a model of biophilic design with a new sports center which will be set in an "open

landscape where the inside and outside meet seamlessly," Preserving the natural lines of the site located in the Umedalen Sculpture Park, Ingels will use the area's "natural bowl-shape" to create a dramatic 4,600 square meter ice rink, Amphitheatre, restaurant, and outdoor cafe,

Figure 2.5 Perspective image, source; Green Jared, *Biophilic Sports Center*

2.2.4 Cleveland Convention Center, Burnham Mall & Global Center for Health Innovation

Architect/Planner: Daniel Burnham

LOCATION: CLEVELAND, OHIO
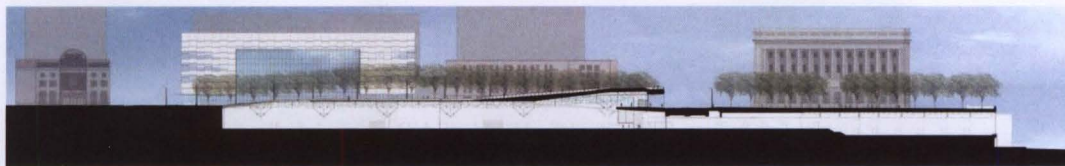
Figure.2.6 Section image, source; Daniel Burnham, *Cleveland Convention Center, Burnham Mall & Global Center for Health Innovation*

A hill rises gently from the center of the Mall, creating a dramatic new vista toward Lake Erie, Just below this elevated promontory is a wall of glass that will glow at night like a wedge of light emerging from the earth,

Figure.2.7 Perspective image, source; Daniel Burnham, *Cleveland Convention Center, Burnham Mall & Global Center for Health Innovation*

The idea blurs distinctions between inside and outside, between architecture and landscape, and between the surface level of the city and what lies hidden below,

2.2.5 Daegu Gosan Public Library Competition Entry / wHY Architecture & D

Figure2.8 Perspective Image, source; wHY Architecture, *Daegu Gosan Public Library Competition*

Figure 2.9 Programming Diagram Image, source; wHY Architecture, *Daegu Gosan Public Library Competition*

Books are made from trees

Trees born from a book

Figure 2.10 Concept Diagram Image, source, wHY Architecture, Daegu Gosan Public Library
Competition

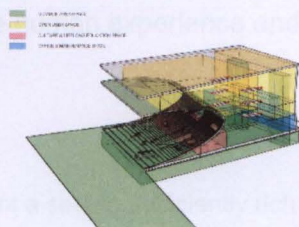The design proposal for the Daegu Gosan Public Library aim towards becoming a knowledge based city by putting a strong emphasis on the multiple roles of a library as a knowledge based center accessible to all,   Designed by wHY Architecture & Design, their project is based on the concept and form of an opened book, The library unfolds to the public green space, engages the landscape into a continuous surface, and invites people to activate and share the space to facilitate knowledge, More images and architects' description after the break,

2.3 THEORY

2.3.1 ATTENTION RESTORATION THEORY (ART)

R&S Kaplan, The experience of nature 1989

It is considered that natural setting provide restorative setting for people has been held with famous urban planner Federick Law Olmsted quoted by Kapkan, in the same way architectural spaces greatly influence human experience and behavior.

RESTORATIVE SETTINGS

Being near nature

Being away in different setting that one`s usual Extent a setting sufficiently rich and coherent

That engages mind and promotes exploration Compatibility good fit between inclination and kind of activities supported by the setting

BIOPHILIA: The innate human attraction to nature and natural system

2.3.2 BIOPHILIC DESIGN

Biophilic design seeks to connect our inherent need to affiliate with nature in the modern built environment, An extension of the theory of biophilia, biophilic design recognizes that our species has evolved for more than 99% of its history in adaptive response to the natural world and not to human created or artificial forces, We became biologically encoded to associate with natural features and processes, Rather than being vestigial – or relevant to a world that no longer exists – this need is thought to remain instrumental to people's physical and mental health, fitness, and wellbeing,

5 PRINCIPLES OF BIOPHIC DESIGN

Figure 2.11Views out to Nature Image, source;
Meio ambiente, *Biophilic Design - Naturally*
Figure 2.13Natural Material Image, source;
Meio ambiente, *Biophilic Design - Naturally*
Improving the Health & Well Being of Space

Figure 2.12 Access to natural light Image, source;
Meio ambiente, *Biophilic Design - Naturally*
IrFigure 2.14Quality of air Image, source; Meio
ambiente, *Biophilic Design - Naturally Improving*
the Health & Well Being of Space

Figure 2.15Prospect enticing views, source;
Meio ambiente, *Biophilic Design - Naturally*
Improving the Health & Well Being of Space

2.4 Park Survey

Figure 2.16Park survey data image, source; *Authors image*
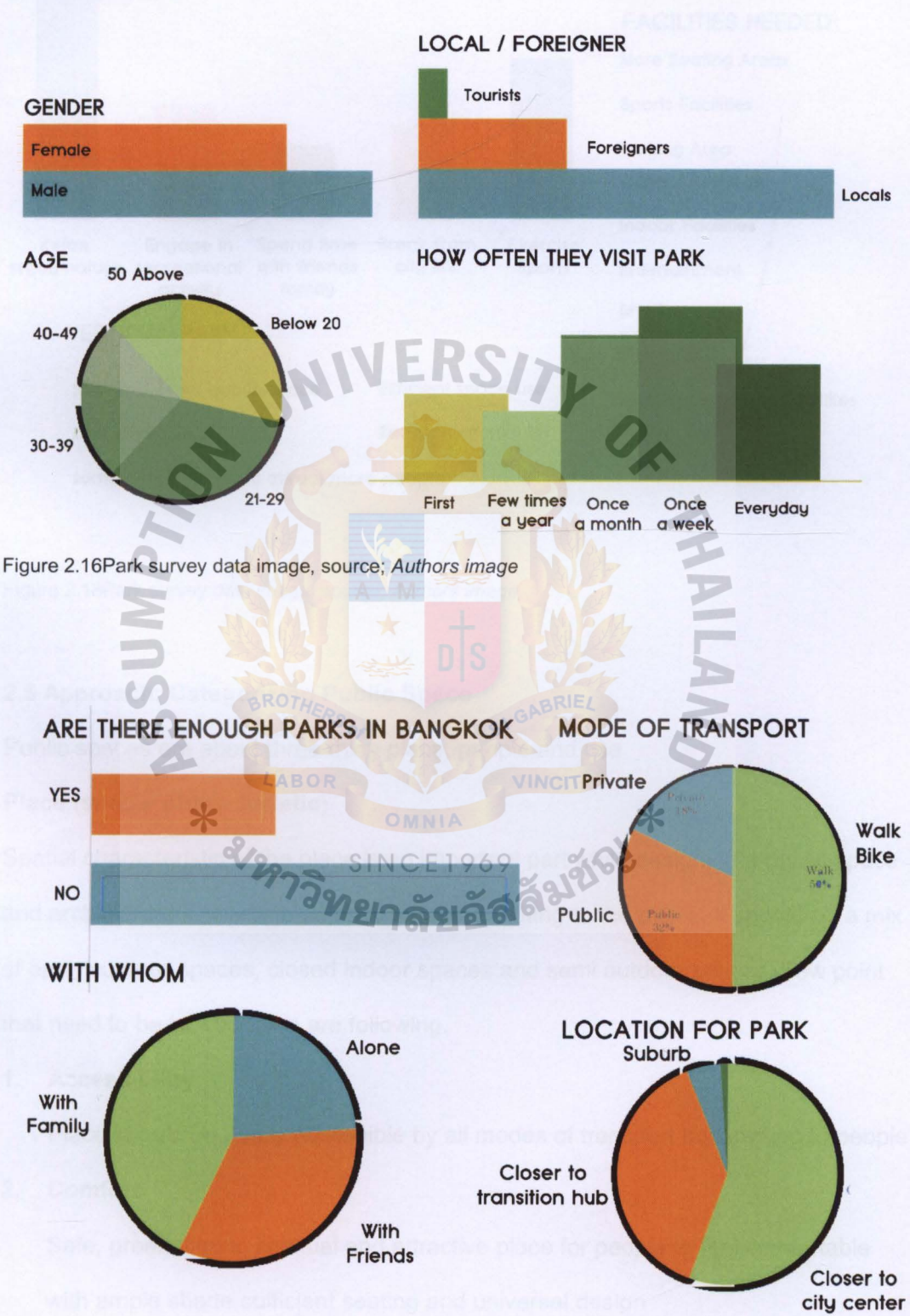
Figure 2.17Park survey data image, source; *Authors image*

PURPOSE OF PARK VISIT

| Relax enjoy nature | Engage in recreational activity | Spend time with friends family | Break from city life | Exercise Sports |

FACILITIES NEEDED

More Seating Areas

Sports Facilities

Parking Area

Cafes / Resturant

Indoor Facilities

Entertainment

Shading

Bike lane

More Recreational Facilities

VERTICAL PARK

Should be real public space   Efficient space use

bad idea   Reduces circulation

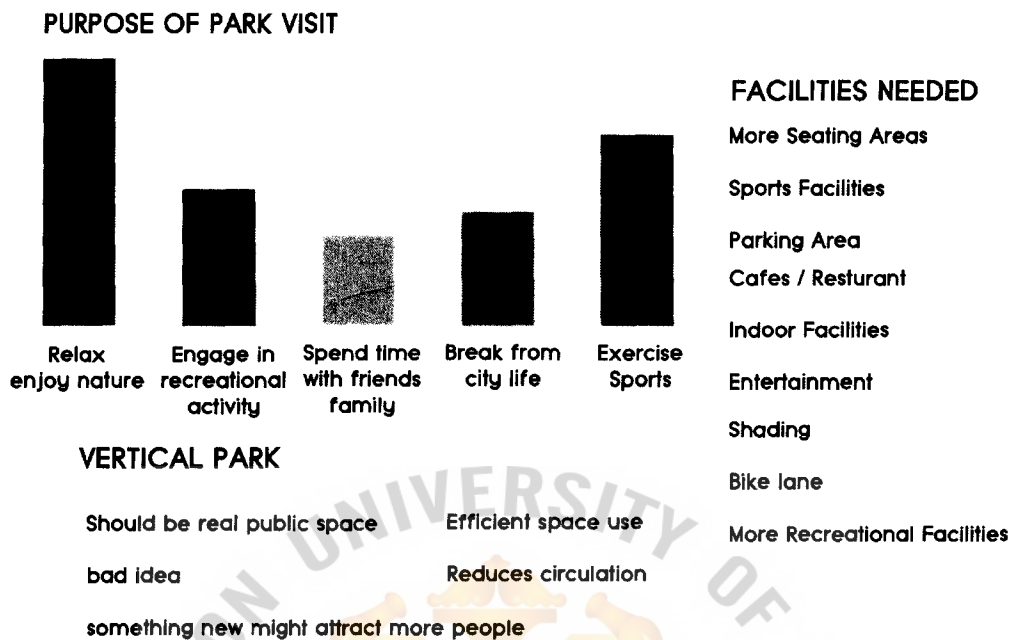something new might attract more people

Figure 2.18Park survey data image, source; *Authors image*

2.5 Approach: Categorizing Public Space

Public spaces are about three thing place, people and use

Place (spatial characteristic)

Spatial characteristic of the place is an important part while designing a public space

and architecture it needs to be appealing and inviting to the public. It should be a mix

of open outdoor spaces, closed indoor spaces and semi outdoor spaces. Few point

that need to be looked upon are following.

1. **Accessibility**

   Place should be easily accessible by all modes of transport and inviting to people

2. **Comfort**

   Safe, green, clean, spiritual and attractive place for people to feel comfortable

   with ample shade sufficient seating and universal design

3. **Array of Activities**

   Ample recreational activity spaces fun, active, useful, and vital spaces

4. **Sociable**

   Diverse, cooperative, friendly, interactive and welcoming space. A space people share and watch out and enjoy with each other.

People (users)

There are all sorts of users at the Public Park and recreational space from locals to internationals living in Thailand and also tourists. It is used by all age groups from infants, kids, youth, adults and elderly people. A few different kinds of users and their use of public space.

Local residents

Quiet space to appreciate nature and exercise and enjoy outdoors

Children

Space to play and run around and perform active recreation

Youth

Space to hang out with friends play sports

Families

Enjoy family time outdoors in nature and relax

Workers

Space outside office to eat and relax with fresh air

Book readers

Quiet secluded space to become totally absorbed in their books

Tourists

Memento from visit, subject or object to photograph and activities to partake in

Buskers

A space to play music where there are people to listen and pay for it

Street artists

A space in which they can make their art work and also sell it

Use (Programs)

Needs to have array of programs and function and not just outdoor but indoor facilities as well There are different sorts of functions from sports facilities to cafés and restaurants to market event and exhibition spaces to social spaces.

By urban recreational space, we generally understand an open space in the urban area where the dwellers go for recreation and refreshment by performing outdoor activities within nature, escaping from the monotonous urban life style held with concrete structures. Such open spaces are essential for the dwellers of the city as development and sense of community. Apart from the dwellers, these spaces add up to making the environment greener and keep the cities in livable condition. However, it is not mandatory for the public spaces to be an open green land always, there are many other types of space that actually works as a place of recreation and social interaction.

Chapter 3: Contextual Proposition

3.1 District selection

The site for the urban recreational park should conform to certain very important factors which directly influence its success

These factors or requirements have been derived from the park survey

1. Proximity to CBD

2. Proximity to residential zone

3. Proximity to transition hub

4. Site visibility

5. Greenery

6. Site Matrix

NO	SELECTION CRITERIA	RATCHATHEWI DISTRICT	WATTHANA DISTRICT	KLONG TOEI TOBACCO FACTORY	KLONG TOEI BENJASIRI PARK
1	PROXIMITY TO CBD				
2	PROXIMITY TO RESIDENTIONAL ZONE				
3	PROXIMITY TO TRANSITION HUB				
4	SITE VISIBILITY FROM PRIMARY ROAD				
5	NATURAL GREENERY				
6	SITE METRIX	9976sqm GREEN AREA 60% 5976sqm BUILT AREA40% 4000sqm	17860sqm GREEN AREA 60% 10860sqm BUILT AREA40% 7000sqm	51200sqm GREEN AREA 60% 30720sqm BUILT AREA40% 20480sqm	39000sqm GREEN AREA 60% 23400sqm BUILT AREA40% 15600sqm

3.2 Site Selection

RATCHATHEWI DISTRICT

Ratchathewi District
Area
• Total 7.126 km2 (2.751 sq mi)
Population
• Total 73.550
• Density 14.093.2/km2 (36.501/sq mi)

PRIMARY ROAD
PHAYA THAI RD
PETCHABURI RD

BTS
RATCHATHEWI
NATIONAL STADIUM
PHAYA THAI

AIRPORT LINK
PHAYA THAI

● RESIDENTIAL
● COMMERCIAL

Figure 3.1Ratchathewi district site analysis, source; *Authors image*

Ratchatwei district is not so close to CBD. But is close to residential zone and has the BTS in front of the site. Although the site area is a little smaller than the other sites.

There is an airport link close by and has a few commercial hotel buildings around and
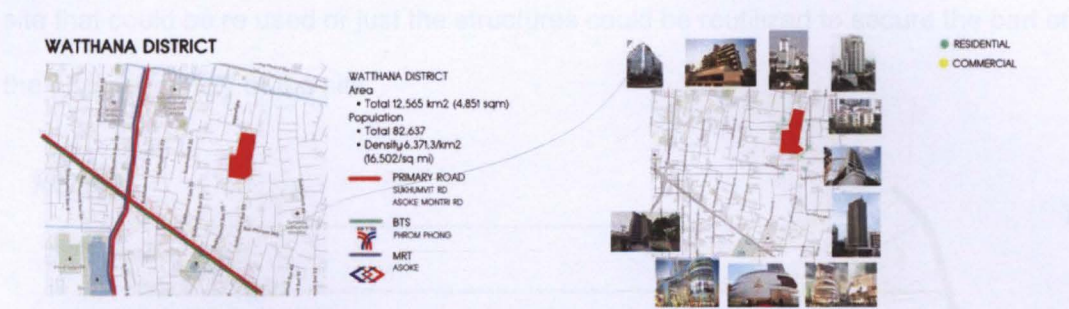
a market place right next to the site.

WATTHANA DISTRICT

WATTHANA DISTRICT
Area
• Total 12.565 km2 (4.851 sqm)
Population
• Total 82.637
• Density6.371.3/km2
(16.502/sq mi)

PRIMARY ROAD
SUKHUMVIT RD
ASOKE MONTRI RD

BTS
PHROM PHONG

MRT
ASOKE

● RESIDENTIAL
● COMMERCIAL

Figure 3.2Wathana district site analysis, source; *Authors image*

Klong Toei District Tobacco Factory

TRANSPORTATION

PHROM PHONG	Ⓜ	QUEEN SIRIKITCONVENTION CENTER
ASOKE		SUKHUMVIT
NANA		KLONG TOEI

Ⓑ BUS STOP
PEDISTRIAN CIRCULATION
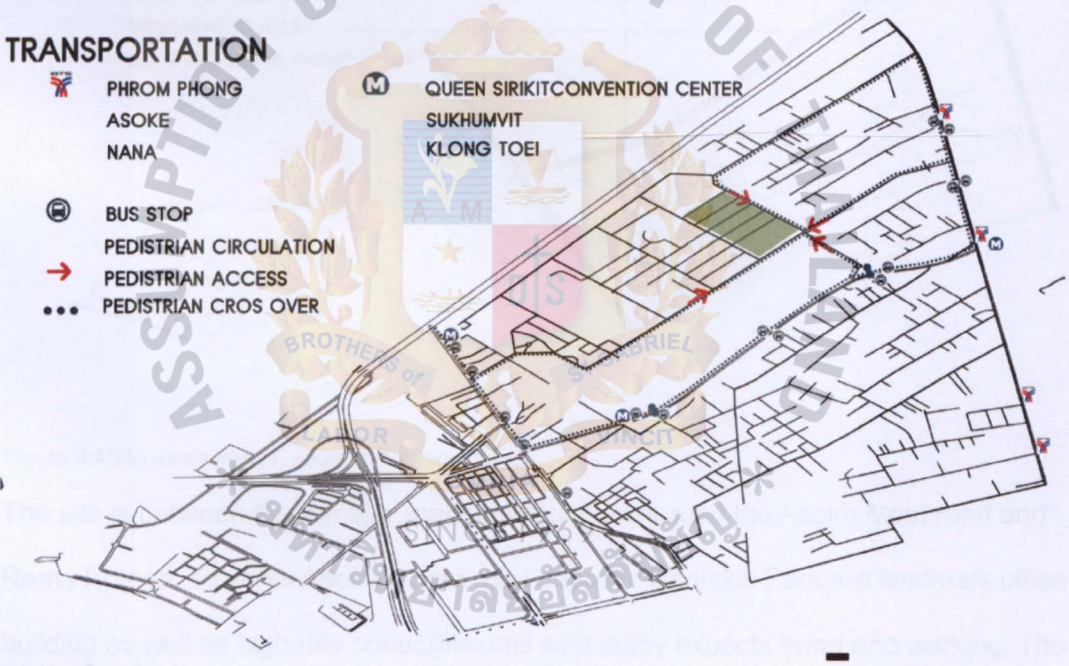→ PEDISTRIAN ACCESS
••• PEDISTRIAN CROS OVER

Figure 3.3Site transportation image, source; *Authors image*

This site being the best match according to the site criteria being closer to CBD,

residential zone and closer to transition hub having both MRT and BTS closer to the

site. This site is also better than the other sites because it is closer to public space,

gathering places like the Benjakiti Park and the Queen Sirikit convention center.

The site is within the premises of tobacco monopoly factory which has been shifted to other site due to the environmental issues. There are still a few factory building on the site that could be re used or just the structures could be reutilized to secure the part of the historic identity of the site.

ROADS

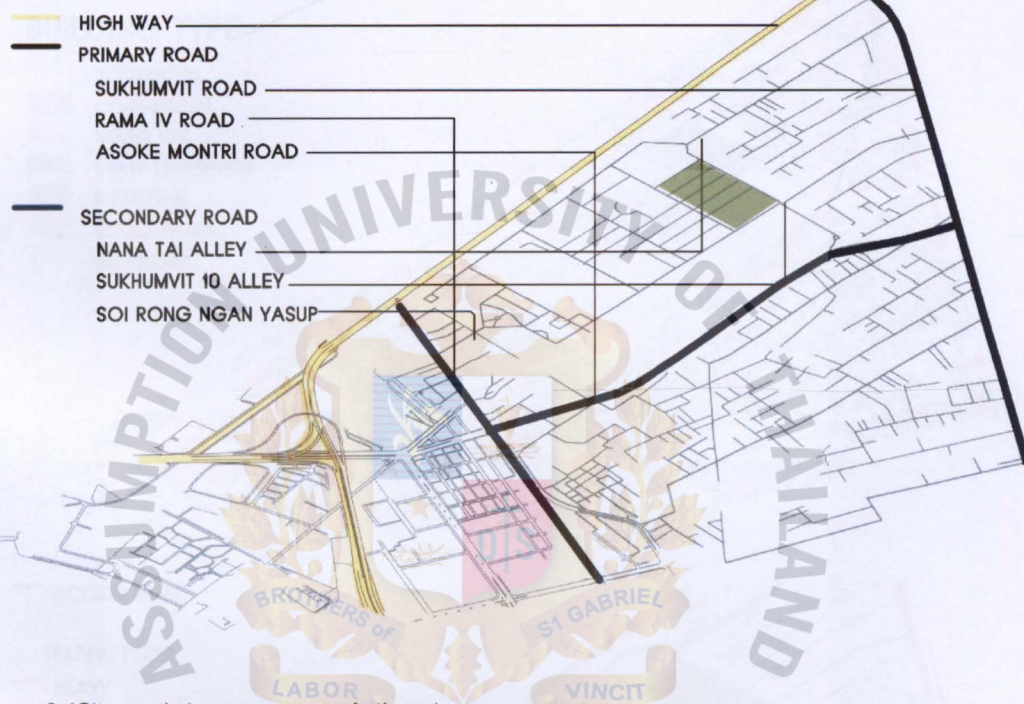|	
HIGH WAY	
PRIMARY ROAD	
SUKHUMVIT ROAD	
RAMA IV ROAD	
ASOKE MONTRI ROAD	
SECONDARY ROAD	
NANA TAI ALLEY	
SUKHUMVIT 10 ALLEY	
SOI RONG NGAN YASUP	

Figure 3.4Site roads image, source; *Authors image*

The site is between three major roads the Sukhumvit road the Asoke Motri road and Rama IV road. Towards Asoke Montri road opposite Benjakiti Park are landmark office building as well as high rise condominiums with many expects living and working. The access to site from the Asoke Montri road is from the Benjakiti Park but there so there is time restriction which is from 6am to 8pm. Towards the Sukhumvit road the access to the site is from Nana Tai Alley which is a commercial street with many Hotels and an international school and a few shop houses and apartments. From Sukhumvit soi 10 there is only a pedestrian access. Sukhumvit Side is more commercial area with many hotels and tourists. Sukhumvit soi 10 has a few residential apartments and

single house residence. There is also a church on Sukhmvit soi 10 closer to the site.

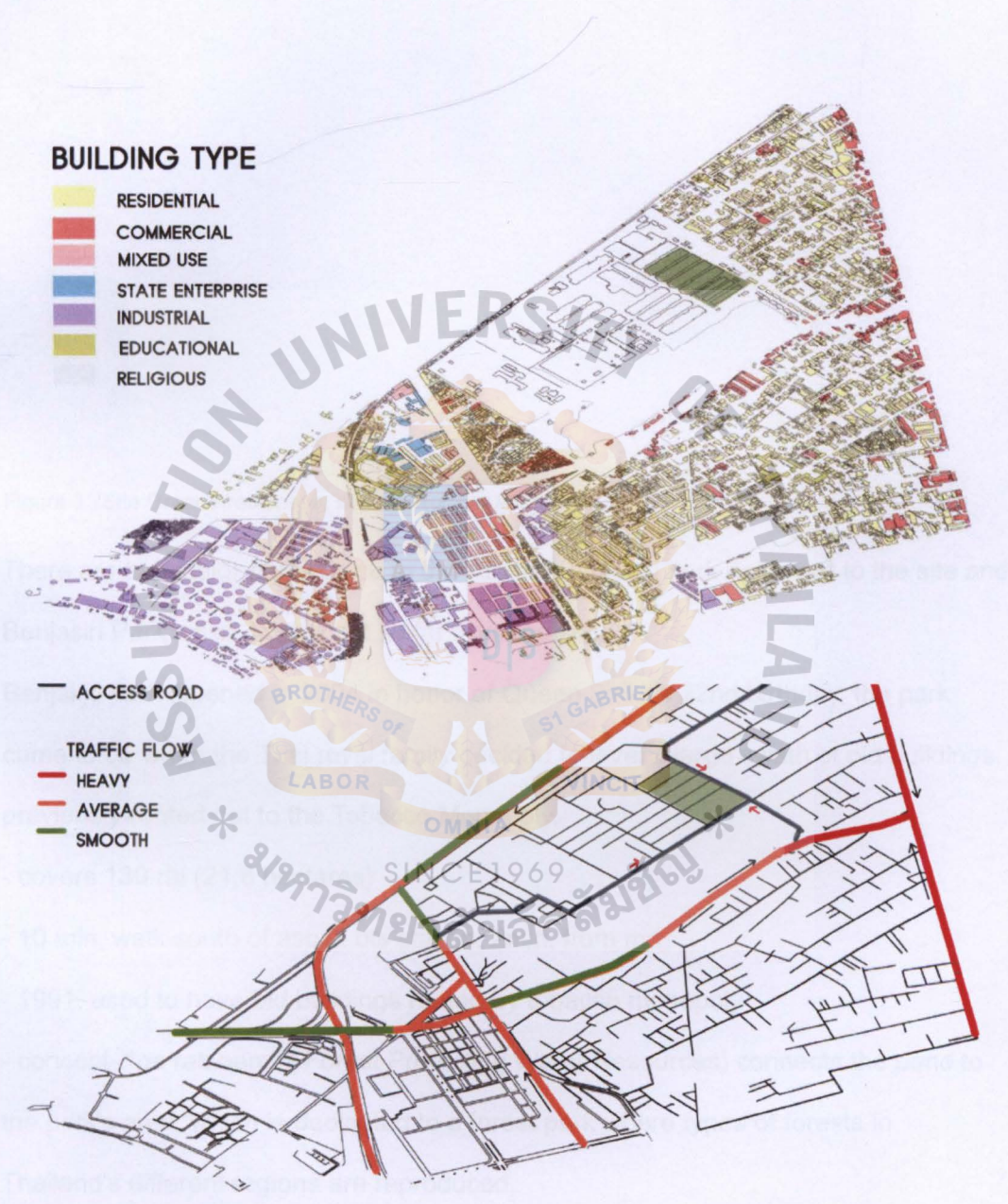Towards Rama IV road it is mostly shop houses and commercial area.

BUILDING TYPE

RESIDENTIAL
COMMERCIAL
MIXED USE
STATE ENTERPRISE
INDUSTRIAL
EDUCATIONAL
RELIGIOUS

— ACCESS ROAD

TRAFFIC FLOW
— HEAVY
— AVERAGE
— SMOOTH

Figure 3.6Site Circulation/traffic flow image, source; *Authors image*

Road the traffic flow is average there is highway on the other side of the site and can

have a clear to the site.

GREEN AREA

CHUVIT GARDEN··········
BENJASIRI PARK··········
BENJAKITI PARK··········
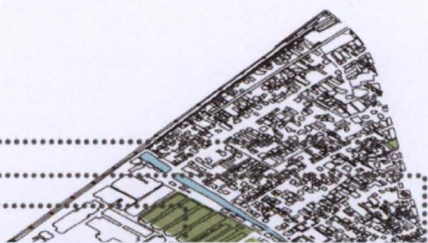PRINCESS MOTHERS·········

Figure 3.7Site Green Area image, source; *Authors image*

There are two major parks close to the site the Benjakiti park right next to the site and

Benjasiri Park which is also not so far from the site.

Benjakiti park Opened in 2004 in honor of Queen Sirikit's 72nd birthday, the park

came to be when the Thai royal family decided to level a large swath of old buildings

previously rented out to the Tobacco Monopoly,

- covers 130 rai (21,8 hectares)

- 10 min, walk south of asosk bts station, 2min, from mrt

- 1991, used to have old buildings rented by tobacco monopoly

- concept- "pa rak nam" (Forest Protecting Water Resources) connects the pond to

the park's area, which is dedicated to a forest park where types of forests in

Thailand's different regions are reproduced,

- outdoor recreation area, health park, playground, walkway, 1,8k loop mam-made

lake, pavilions, 2 lanes around the perimeter 2km cycling and jogging (40 baht/hr for

cycle)

Current site condition

Figure 3.8Site propose plan image, source; *Tobacco Monopoly Bangkok*
Figure 3.3Site transportation image, source; Authors image

The site was the Tobacco Monopoly Factory but the site being in the center of

Bangkok and environmental issue they decided to move the factory and give the site

as an extension of the Benjakiti park the removal of the factories is still in process,

Figure 3.9Site Arial image, source; Lindsey Larry, *Tobacco monopoly property renovated*

Figure.3.10Site image, source; *Authors image*   Figure.3.11Site image, source; *Authors image*
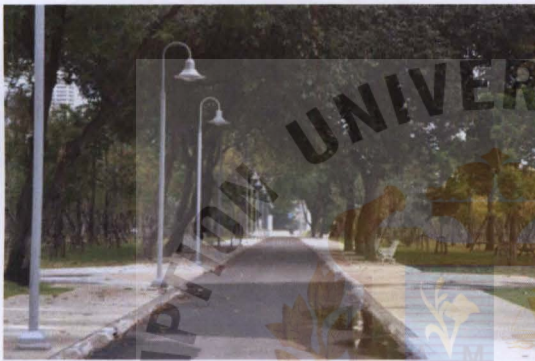
Figure.3.12Site image, source; *Authors image*   Figure.3.13Site image, source; Authors image

A part of the site has been redone which is divided into grid with roads and footpaths and the center green patches have a few trees planted. There are few factories on the site that still haven't been removed. One side of the site is divided by the road from Benjakiti Park from where you can access the site. On the north side of the site is a canal which separates the site from the Sukhumvit side.

CHAPTER 4 Potential design response

As the project aims in integration of nature and architecture in an urban city. The study of urban dwellers lifestyle and the need was taken into consideration for project programming

4.1 Design scope

By studying the meaning organization, users, spaces and activities of the urban dwellers and relating the site condition to define exact programs and space by new design. The purpose of the design is to create a new type of urban recreational venue in center of Bangkok, which brings back urban dweller close to nature.

4.2 Programming analysis

As there has been shift in urban people lifestyle and preferences due to environmental and health issues in urban cities.

1. **From staying indoors to going outdoors**

    Realizing the needs to go outdoors and close to nature for better health and better quality of life but there are limited outdoor public spaces to enjoy nature.

2. **Recreation from malls to more active outdoor recreation**

    Malls being the major recreational venue in Bangkok due to extreme weather conditions. It is where most of the people in Bangkok spent their free time with friends and family. With a lot of people becoming health conscious as well as new recreational facilities like rock climbing opening up people are shifting from the malls to sports and fitness.

3. **Food from fast food to healthy eating**

   Due to the fast pace life in urban cities people tend to eat whatever they can get

   fast hence eating fast-food and all the unhealthy food but obesity becoming one of

   the health issues in Bangkok people have switched to eating healthy a lot of

   healthy restaurants have opened up in Bangkok and many farmers market for

   healthy organic food.

These all shift in preferences in urban lifestyle leads to the programming of the project

which is dived in to three main category

1. Active recreation the sports facilities

The major program of the facility. The sports facilities are also chosen according to the

recreational sports trends in Bangkok.

2 The market space, food and gathering areas

  The market space is divided into permanent and temporary market and also a few

retail spaces for sports equipment as well as sports rental. And the food are will be

divided into cafes and restaurants. And also gathering spaces.

3 The landscape (nature)

Landscape is also divided into two usable functional quality and aesthetic quality

The venue will be a mix of indoor space, outdoor space and semi outdoor space

4.3 Organization structure

   Due to the shared interest of tobacco monopoly and government environment

   department, it could become a joint venture. According to the facilities the

   organization structure will be divided into three main structures.

   1. The sports facility management

      The management of sports facilities and booking and events and also the

   facility tech.

2. Market and food

The management will be customer service, kitchen and social even

management and staff

3. The landscape

The management for landscape and all the functional landscape even event

management for function at amphitheater gardening staff.

User cycle

First of all they go recreation active or passive and after recreation they eat so go to

eat and after that buy stuff and return home. It's like a cycle and due to extreme traffic

conditions in Bangkok people usually try to finish all the work at one place. And that is

also the reason most of the fitness center in Bangkok are inside the malls.

4.4 Activity/spaces

1. Sports

It could be divided into indoor and outdoor sports spaces. Sports courts have

specific area requirements but the space could be changed by opening it up more

and brining it close to nature. And running track could run on top of the sports

courts integrating different sports together with view and space.

2 market and food

It could also be divided into indoor and outdoor or become semi outdoor space

Playing with levels and having visual connection between each function and

Space.

3 landscape green space

Landscape is divided into two qualities one being the aesthetic quality and other

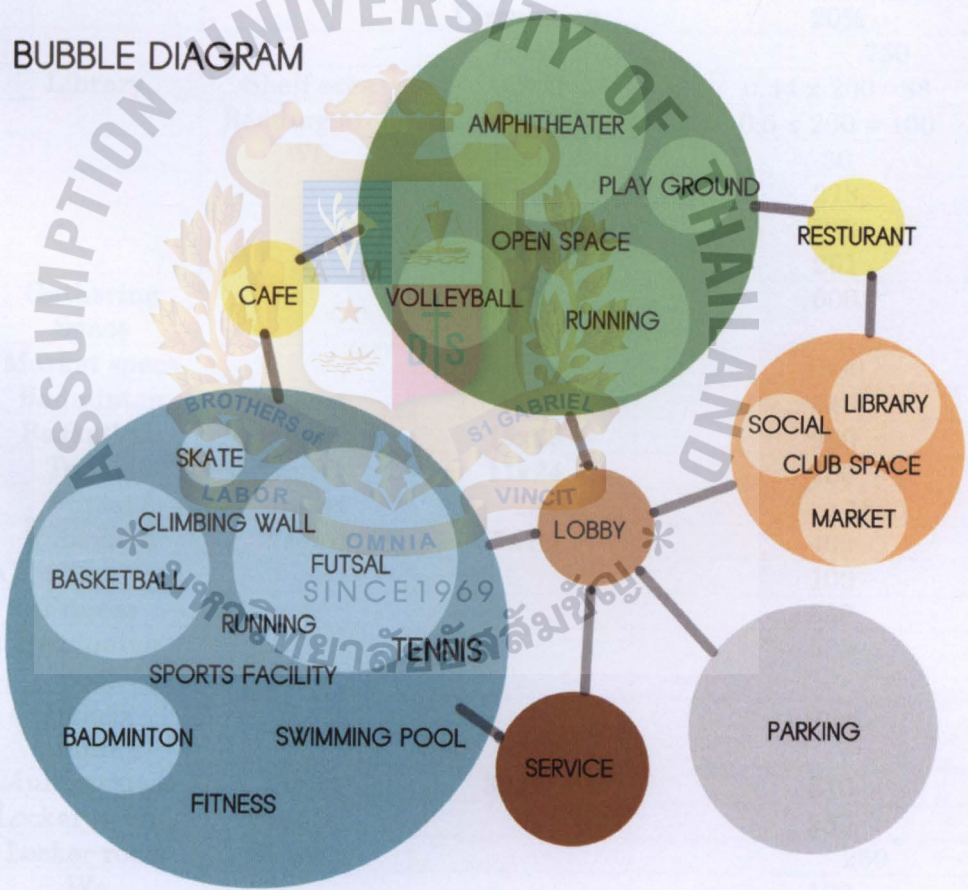being the usable functional quality spaces like amphitheater

Space Summary

250 LOBBY WELCOME CENTER
150 MEMBER SERVICE OFFICE
500 GATHERING SPACE
100 LIBRARY
300 CAFE
400 RESTURANT
1000 MARKET

250 FEMALE LOCKER
200 MALE LOCKER
100 RESTROOM
100 ADMIN OFFICE
2000 CARPARK

100 CLIMBING WALL
200 PLAYGROUND
960 BASKETBALL
1000 INDOOR RUNNIG TRACK
780 TENNIS
1800 FUTSAL
400 BEACH VOLLEYBALL
300 FITNESS
640 BADMINTON
500 SWIMMING POOL
1000 AMPHITHEATER

BUBBLE DIAGRAM

AMPHITHEATER
PLAY GROUND
OPEN SPACE
VOLLEYBALL
RUNNING
RESTURANT

CAFE

LIBRARY
SOCIAL
CLUB SPACE
MARKET

SKATE
CLIMBING WALL
FUTSAL
BASKETBALL
RUNNING
TENNIS
SPORTS FACILITY
BADMINTON
SWIMMING POOL
FITNESS

LOBBY

SERVICE

PARKING

Space Summary

Section	Function	Program	Number of Users	Area Requirement(sq.m) (Unit x area per user)
Public	Lobby	Reception	50	6 x20 = 120
		Waiting area	0-100	3.2 x 100 = 320
		Total		440
		Circulation		**20%**
		Total Area		**528**
	2restaurant	Dining	100	1.75 x 100 = 175
		Kitchen	10	0.5 x 100 = 50
		4cafe		400
		Total Area		**625**
		Circulation		**20%**
		Total		750
	Library	Shelf area	0-200	0.44 x 200 =88
		Reading area	0-50	0.5 x 200 = 100
		WC	4(f), 2(m), 4(u)	30
		Total		218
		Circulation		20%
		Total Area		261
	Gathering Space		500	600
	Market space			1500
Sports	Badminton	4court	13.45x6.15	640
	Basketball	2 court	**15x28**	**960**
	Tennis	2court	**11x24**	**780**
	Futsal	4court	25x15	1800
	Volleyball	2 court	9x18	400
	Climbing wall			100
	Fitness			300
	Swimming pool			500
	Indoor running			1000
	Multipurpose	Court	**30x17**	**510**
	Locker room	Male		**250**
	Locker room	Female		250
	Wc	-		100
Outdoor	amphitheatre			1000
	Playground			200
Service	Admin			100
	Storage			200
	Loading			200
	Parking			2000

Chapter 5: Building Technology

1. Green roof system

Green roofs serve several purposes for a building, such as absorbing rainwater, providing insulation, creating a habitat for wildlife, increasing benevolence and decreasing stress of the people around the roof by providing a more aesthetically pleasing landscape, and helping to lower urban air temperatures and mitigate the heat island effect. They effectively utilize the natural functions of plants to filter water and treat air in urban landscapes
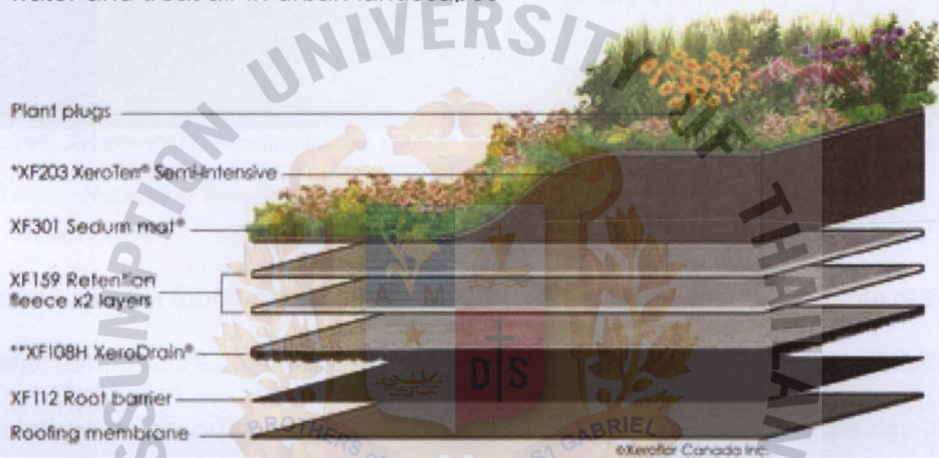

Figure5...1Green roof system image, source; a cision company, *Minimalist Green Roof Achieves Purpose*

As the project aims on to making better environment and integrating nature with architecture this is one of best systems that could be applied in the project

2. Rain water collection and harvesting

Rainwater harvesting is the accumulation and deposition of rainwater for reuse on-site, rather than allowing it to run off. Rainwater can be collected from rivers or roofs, and in many places the water collected is redirected to a deep pit (well, shaft, or borehole), a reservoir with percolation, or collected from dew or fog with nets or other tools.

As the project will be dealing with a lot of landscape rain water collection and harvesting system could be really beneficial for the project
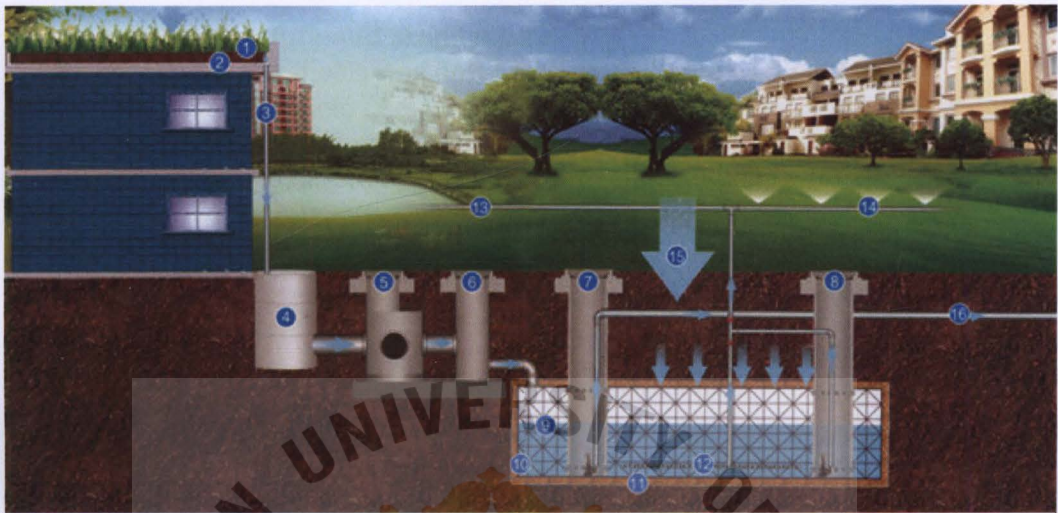
Figure5...2Rainwater harvesting image, source; Geening solution, *Stormwater Storage Module Rainwater Harvesting Tank System*

3. Green wall

Green walls are found most often in urban environments where the plants reduce overall temperatures of the building. "The primary cause of heat build-up in cities is insolation, the absorption of solar radiation by roads and buildings in the city and the storage of this heat in the building material and its subsequent re-radiation. Plant surfaces however, as a result of transpiration, do not rise more than 4–5 °C above the ambient and are sometimes cooler."
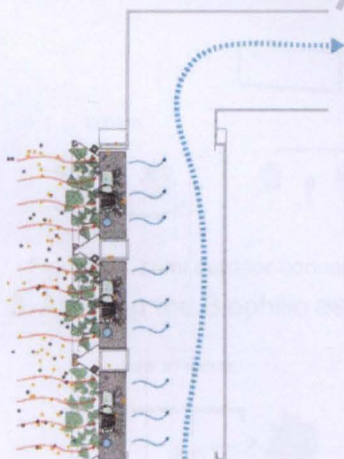
Figure 5.3 Green wall section image, source; petify.co, *Living Walls Vertical Gardens and Green Walls*
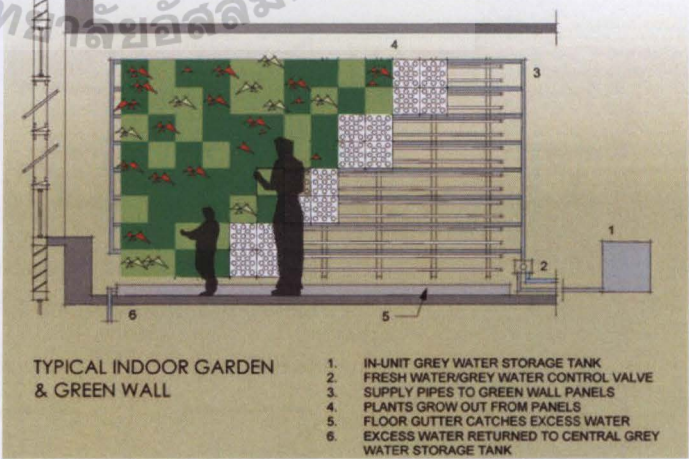
Figure 5.4Green wall diagram image, source; petify.co, *Living Walls Vertical Gardens and Green Walls*

Chapter 6: Design Schematic

6.1 Concept development

Integration of nature and architecture
As the issue of this thesis was how to integrate nature with architecture. Integration of nature into and onto architecture as the project deals with indoor and outdoor facilities. Could shift the design by bringing indoor spaces outdoor and outdoor space indoor. And having semi outdoor space

ARCHITECTURE   INTEGRATION   NATURE

Figure6.1. conceptual diagram, source author's image

Integration of architecture and nature using green building systems

1. The main three ways of integrating architecture and nature using green roof system, green wall system and bringing nature indoors

GREEN ROOF SYSTEM   GREEN WALL SYSTEM   BRINGING NATURE INDOOR

Figure6.2. green system concept, source author's image

2. Blurring the lines between indoor and outdoor by creating semi outdoor spaces trying different architectural approach to blur the lines between indoor and outdoor spaces

CLOSED

OPEN
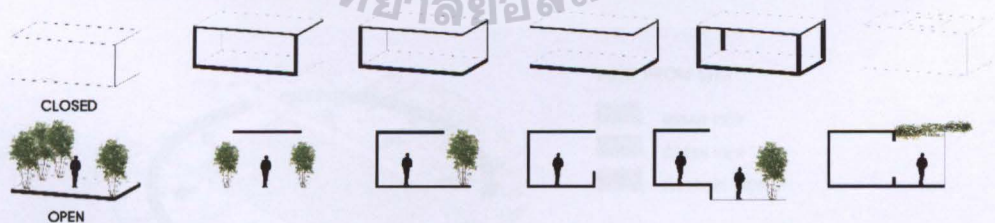
Figure6.3. semi outdoor conceptual diagram, source author's image

3. Applying the Biophilic design principles into the design

VIEW TO NATURE   NATURAL LIGHTING   NATURAL VENTILATION   WATER FEATURE

Figure6.4. Biophilic design diagram, source author's image

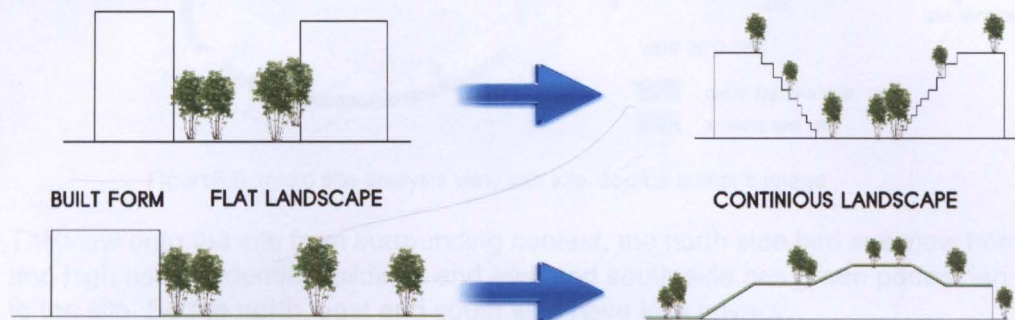4. Integrating landscape and architecture by continuous landscape into and on to the building.

BUILT FORM   FLAT LANDSCAPE   CONTINIOUS LANDSCAPE

Figure6.5. conceptual diagram, source author's image

6.2 Design Development

Micro site analysis

SURROUNDING CONTEXT

FACTORY BUILDINGS
GREEN AREA
WATER BODY
RELIGIOUS BUILDING
HIGHRISE
RESIDENTIAL

Figure6.6. micro site analysis surrounding context, source author's image

The south and the east side of the site is surrounded by green area east side of the site is Benjakiti Park west side of the site is old factory buildings and north side of the site is urban residential and hotel buildings which is divided by canal with the site.

VIEW FROM SITE

URBAN VIEW
GREEN VIEW
FACTORY VIEW

200
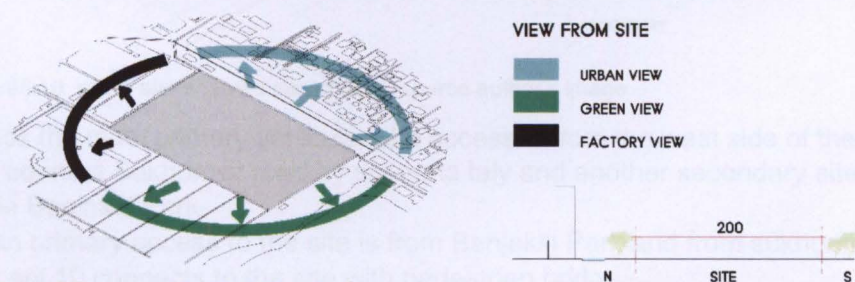
N   SITE   S

Figure6.7. micro site analysis view from site, source author's image

Views from the site east and south side have good view towards the green and the west side of the park views to old factory buildings and north side views to urban city context.
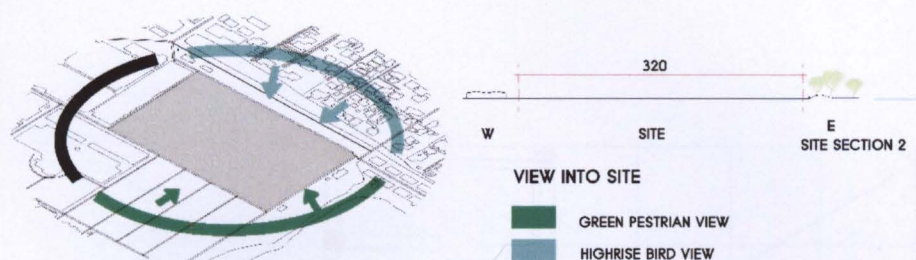
Figure6.8. micro site analysis view into site, source author's image

The view onto the site from surrounding context, the north side bird eye view from mid and high rise residential buildings and east and south side has green pedestrian view to the site. So the north, east and south side have less privacy.

Figure6.9. micro site analysis site threats, source author's image

Site threats as there is canal running on the north side of the site there is flooding threat and also flooding threat from the Benjakiti Parks large pond in the center. There is future development threat from the west side of the site where the old unused factory buildings are.

Figure6.10. micro site analysis site access, source author's image

Site access the main primary vehicular site access is from the west side of the site the road that connect Sukhumvit road by soi nana taly and another secondary site access is from the Benjakiti Park.

Pedestrian primary access to the site is from Benjakiti Park and from sukhumvit road the Nana soi 10 connects to the site with pedestrian bridge.

Zoning
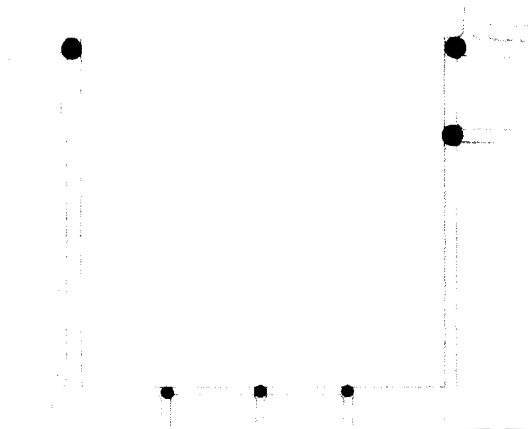
Figure6.11. access points, source author's image
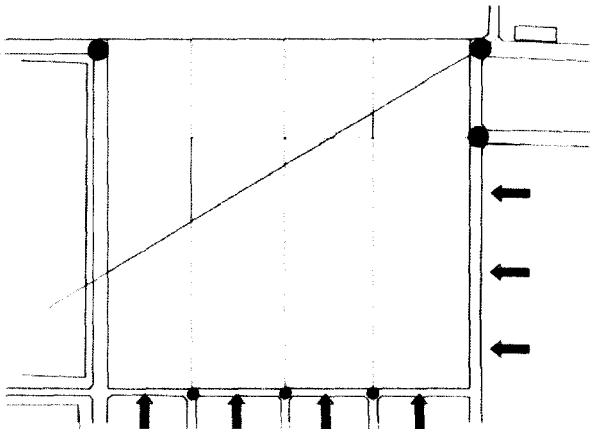
Figure6.12. green connection, source author's image

According to the site context there were 5 access points to the site
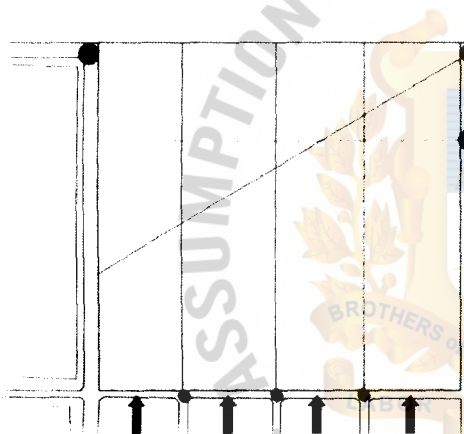And green connection to the site from two sides of the site.
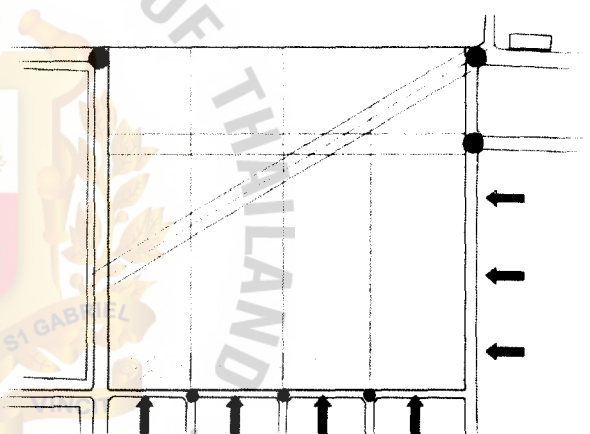

Figure6.13. axis, source author's image

Figure6.14. zoning, source author's image

Making axis from these access points and the green connection to do the program
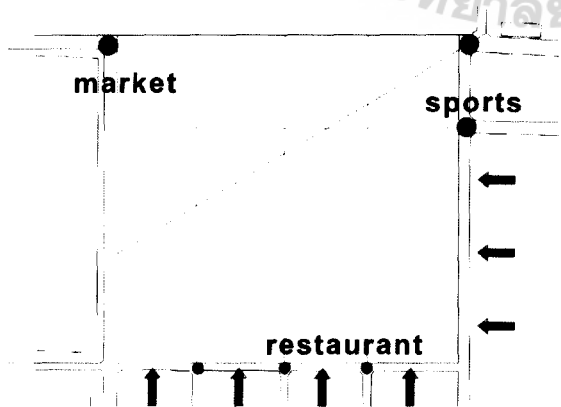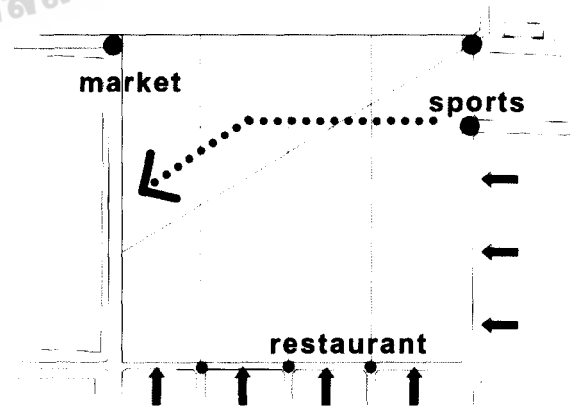placement on the site

Figure6.15. program, source author's image

Figure6.16. sports, source author's image

According to the site surrounding context and site access points the blue zone sports facilities to be placed near Benjakiti Park and towards the north side of the site. The orange zone the market zone closer to the access point from the sukhumvit road. The purple zone the restaurant and café between the sports and market and keeping the green connections from the park.
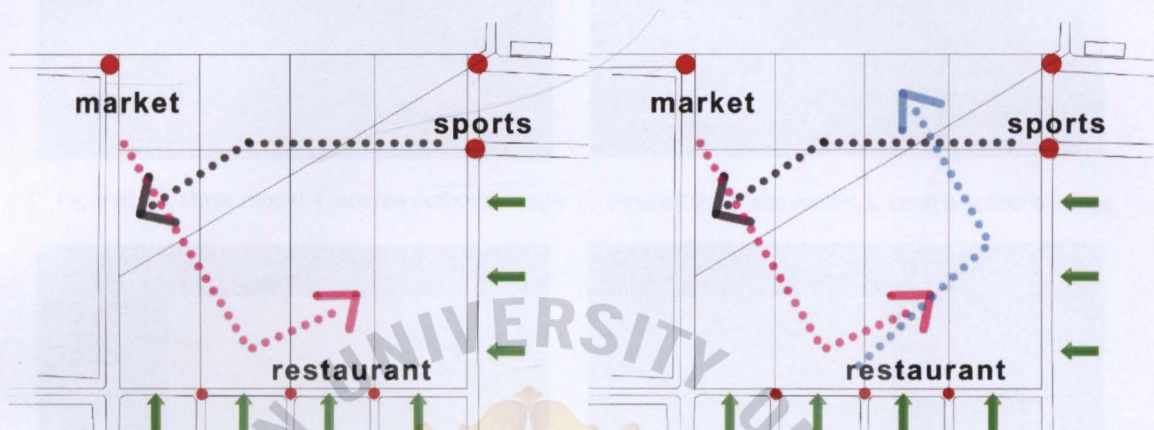

Figure6.17.market, source author's image   Figure6.18. restaurants, source author's image

The sports facilities starting from Benjakiti park group sports to individual sports.
The market starting from urban access point open market to retail.
The food starting from food court to restaurants and cafes.

Form development

Figure6.19. form development1, source author's image

First tried to make a form that architecture can merge with the landscape

Figure6.20. massing development, source author's image
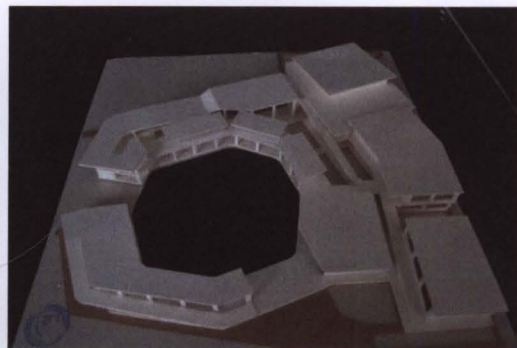
Figure6.21, Mass model 1, source author's image

Figure6.22. Mass model 2, source author's image

Figure6.23. development model 1, source
author's image

Figure6.24. development model 2, source
author's image

Figure6.25. development model 2.1, source
author's image

Figure6.26. development model 2.2, source
author's image

Figure6.27. development model 2.3, source
author's image

Chapter 7: Design Summary

Figure7.1. layout, source author's image

Figure7.2.model layout, source author's image

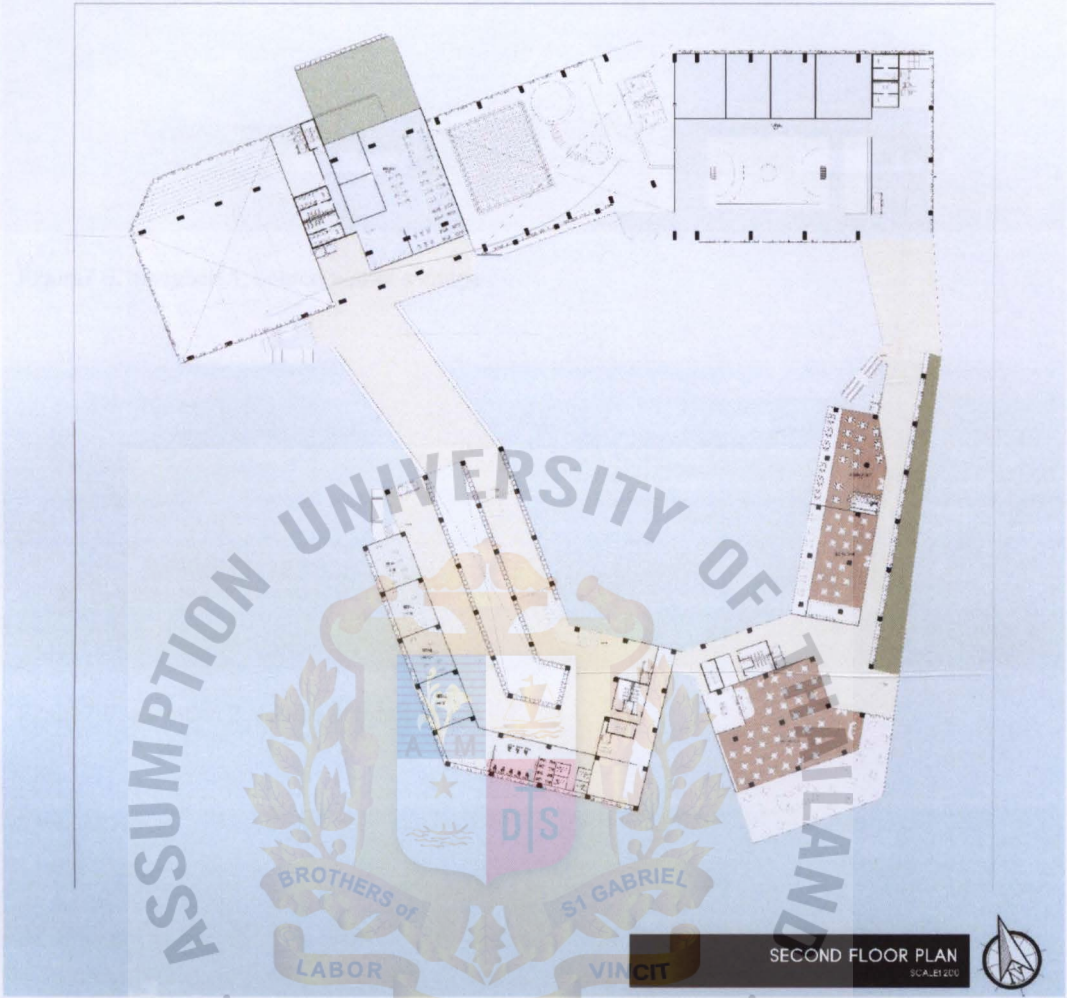Figure7.3. ground floor plan, source author's image

Figure7.4. second floor plan, source author's image
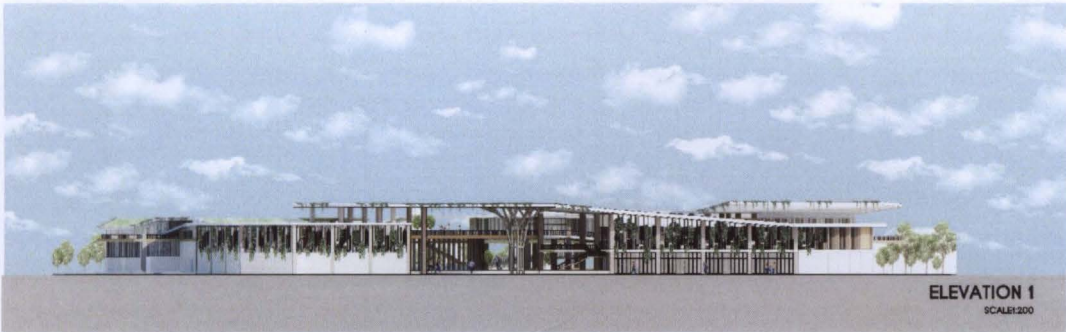
Figure7.5. elevation 1, source author's image

Figure7.6. elevation 2, source author's image

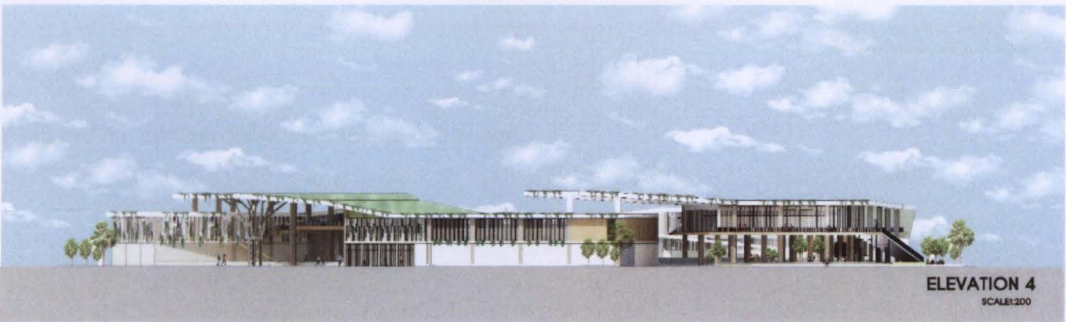Figure7.7. elevation 3, source author's image

Figure7.8. elevation 4, source author's image

Figure7.9. section 1, source author's image

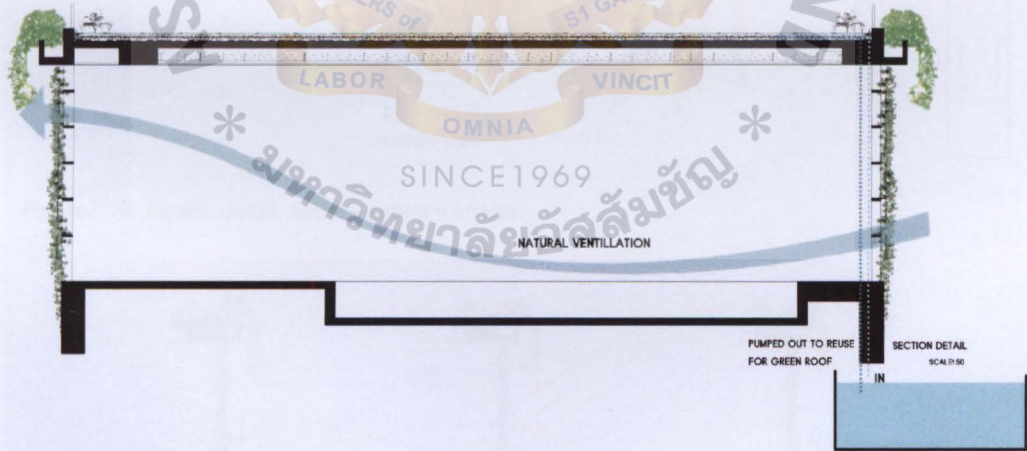Figure7.10. section 2, source author's image

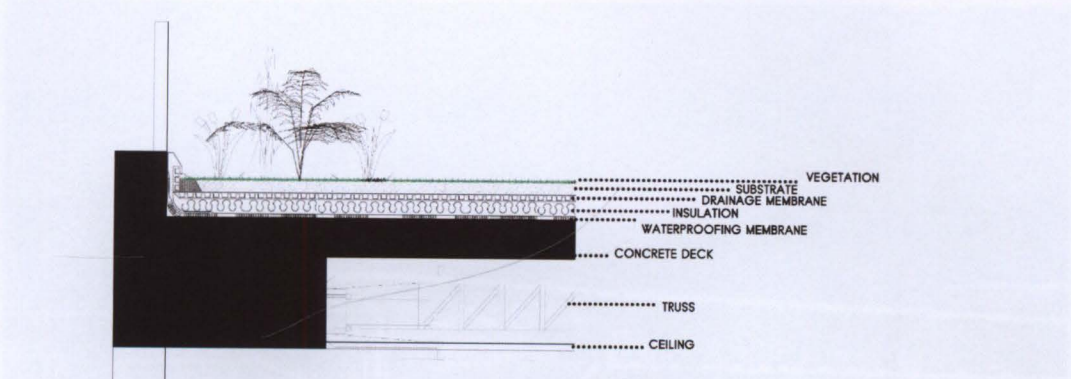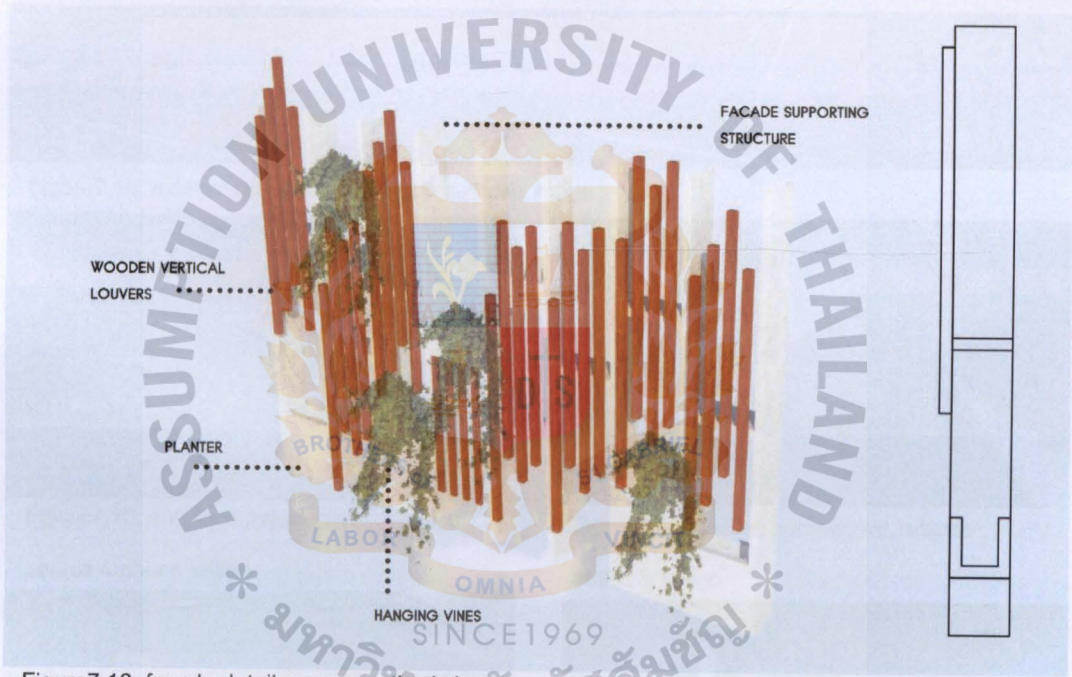Figure7.11. section detail, source author's image

VEGETATION
SUBSTRATE
DRAINAGE MEMBRANE
INSULATION
WATERPROOFING MEMBRANE
CONCRETE DECK
TRUSS
CEILING

Figure7.12. green roof section detail, source author's image

FACADE SUPPORTING STRUCTURE

WOODEN VERTICAL LOUVERS

PLANTER

HANGING VINES

Figure7.13. façade detail, source author's image

BREEZE
NATURAL VENTILATION

NATURAL LIGHTING
BUT NOT DIRECT SULIGHT

RAIN PROTECTION

GREEN WALL PERMITS AIR AND LIGHT INTO THE BUILDING BUT BLOCKS DIRECT SUNLIGHT AND RAIN IN
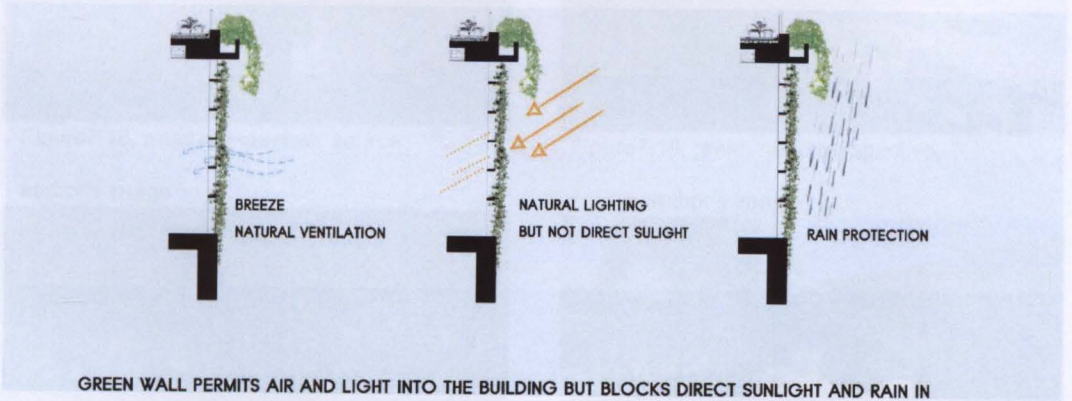
Figure7.14. green wall system, source author's image

Figure7.15. exterior perspective, source author's image

Figure7.16, entrance perspective,
source author's image

Figure7.17, garden perspective, source
author's image

Figure7.18, retail perspective, source
author's image

Figure7.19, green ramp perspective,
source author's image

Figure7.20, tennis court perspective,
source author's image

Figure7.21, amphitheater perspective,
source author's image

Figure7.22, amphitheater stage
perspective, source author's image

Figure7.23, open market perspective,
source author's image

Figure7.24, final model, source author's image

Figure7.25, final model, source author's image

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