

**PROJECT X:  
Integrating an elevated LRT structure  
in Manila's urban streetscape.**

by  
Louella Pleasant Yambot

A Practicum submitted to the Faculty of Graduate Studies of  
The University of Manitoba  
in partial fulfillment of the requirements of the degree of

MASTER OF LANDSCAPE ARCHITECTURE

Department of Landscape Architecture  
University of Manitoba  
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## **ABSTRACT**

The occupation of an elevated LRT structure in Manila's urban streetscape affect the activities, uses, and functions of the street, and create a blight impression of the streetscape and surrounding neighborhood. There are opportunities to integrate an elevated LRT structure in the area as a way of improving the condition and impression of the street, and promoting urban growth. This practicum proposes design interventions for intergrating an elevated LRT structure in a high-density neighborhood of Manila,Philippines. It focuses on pedestrian circulation under the LRT carriageway and a theoretical framework consisting of concepts associated with boulevard design, LRT structures, and perspective. This practicum concludes with a masterplan of the area and corresponding design interventions that integrates the elevated LRT structure in the street, and proposes a pedestrian-oriented, transit-friendly place.

## **ACKNOWLEDGEMENTS**

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## **DEDICATION**

I dedicate this practicum to my mother, Kuya and Sto.Nino for their encouragement and inspiration. Thankyou for your creativity, guidance and energy. I share this achievement with you.

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## PROJECT OVERVIEW

The Light Rail Transit Authority of Manila proposes to extend the existing Light Rail Transit (LRT) Line 1, from Baclaran neighborhood in Pasay City to Zapote neighborhood, in Cavite province. Its purpose is to decongest Metro Manila and promote growth in adjoining provinces (Source: <http://www.lrta.gov.ph/>, accessed June, 2007). However, this proposal raises some concern for Baclaran neighborhood, particularly for the Baclaran market because the LRT structure will occupy space in its busy street. At the onset of the practicum, the following three questions were asked: 1) what will happen to Baclaran market? 2) How will the LRT affect the activities of the street? and 3) Will the LRT cause a transformation in the urban setting?

This practicum project focuses on the LRT extension that travels from Baclaran station to the proposed Redemptorist Station, in Baclaran neighborhood. It covers an area from Redemptorist Road to approximately two blocks south of Roxas Boulevard, where it includes public space, transit facilities, and commercial buildings.

The goals of the project are twofold: 1) to focus on pedestrian circulation patterns throughout the area, especially under the LRT structure, and 2) to develop the area into a pedestrian-oriented, transit- friendly place.

The objectives for the project are:

- To improve the integration of the LRT structure in the streetscape.
- To redesign the structure to support existing users' activities on the street, and enhance their experiences throughout the area.
- To develop a program that focuses on the relationship between the LRT and pedestrians.
- To design a master plan for the area focusing on three places:
  - Redemptorist Road,

- Roxas Boulevard and the LRT station, and
- Canal waterway.

## **PRACTICUM STRUCTURE**

This practicum is divided into four parts:

**Part one** outlines the development program for the project. It provides a list of key components and their objectives used in the project. This part also presents case studies relevant to the masterplan.

**Part two** provides a theoretical framework for the project. It includes a summary of concepts associated with boulevard design, LRT structures, and perspective.

**Part three** outlines site inventory and analysis of the area, including information about the LRT. Site visits throughout the area and under the current LRT were recorded, and are discussed in this section. This part ends with two conceptual development plans for the site and the neighborhood.

**Part four** concludes with the design of the masterplan and corresponding design interventions for the integration of the LRT structure in the street.

## **PART ONE: DEVELOPMENT PROGRAM**

### **1.1 PROJECT COMPONENTS and OBJECTIVES**

The components of the project fall into three categories, associated with specific objectives. These categories are:

- 1) Light Rail Transit: LRT carriageway and columns, and Redemptorist Station.
- 2) Public Spaces: Canal boardwalk, Gateway, Baclaran market, and Plaza.
- 3) Transit Facilities: Organized Bus Route terminal, Transit services, and Public parking.

#### **1.1.1 LIGHT RAIL TRANSIT (LRT) OBJECTIVES**

##### **LRT CARRIAGEWAY and COLUMNS**

- To design the structure to be a landmark for the neighborhood.
- To provide spaces to wait, gather and rest.
- To redesign the form of the carriageway and columns to support street activities.

##### **REDEMPTORIST STATION**

- To be a part of the major transportation node in the area and neighborhood.
- To provide connections to other transit systems in the area such as the Organized Bus Route Terminal, and the Mall of

Asia shuttle.

- To connect directly to the Park & Ride facility.
- To provide access to other public open spaces in the area.

### **1.1.2 PUBLIC SPACES OBJECTIVES**

#### **CANAL BOARDWALK**

- To establish pedestrian passageways from Manila Bay to the city.
- To initiate development along the edges of the canal with commercial, residential and passive recreational uses.
- To connect with the Gateway.

#### **GATEWAY**

- To create a sense of arrival into this part of the city.
- To become a landmark for the neighborhood by reflecting the historic relationship between Baclaran market and Manila Bay.
- To function as a place to gather, sit and rest.
- To provide and maintain views of the canal and area.

- To provide visual relief and calm open space to compliment the open space of the water.
- To provide links to places along Roxas Boulevard and Redemptorist Road.

### **BACLARAN MARKET**

- To enhance the experience of the place.
- To define spaces for pedestrians, drivers and vendors on Redemptorist.
- To design the west end of Redemptorist as the entrance way into the market.

### **PLAZA**

- To extend market activities along Roxas Boulevard.
- To provide active spaces for the market and passive spaces for the cathedral.
- To provide pedestrian pathways through the space and across Roxas Boulevard.

### **1.1.3 TRANSIT FACILITIES OBJECTIVES**

#### **ORGANIZED BUS ROUTE TERMINAL (OBR)**

- To accommodate safe, accessible and direct pathways from the terminal to other spaces in the area.
- To designate clear areas to load, unload and wait for the buses.
- To provide direct connections to the LRT station.

#### **TRANSIT SERVICE TYPES**

- To provide Jeepney stops and waiting area.
- To provide taxi stops and waiting area.
- To provide FX (jeep) stops and waiting area.
- To provide Mall of Asia shuttle (MOA) stop and waiting area.
- To provide direct links to transfer points.

#### **PUBLIC PARKING**

- To provide a Park & Ride facility for LRT patrons.
- To provide long-term parking for the area.
- To provide short-term parking for businesses along Roxas Boulevard and Redemptorist Road.

## 1.2 COMPATIBILITY MATRIX

The compatibility matrix evaluates the one-on-one relationship between project components and objectives. Each relationship can be categorized into three types: compatible, non-compatible, or neutral. In Table 1, the matrix has helped to identify conflicts and compatibilities between the components in the development program. The main conflict exists between the LRT and Baclaran market because the LRT occupies space in the market, which affects circulation pattern and space for street activities. Other conflicts are identified between public spaces and transit facilities based on the type of activities and users. In Baclaran market, the canal boardwalk, and the plaza generate pedestrian users, while the LRT station, OBR terminal generate

Table 1. Compatibility matrix for project components.

PROJECT COMPONENTS	MOA SHUTTLE	FX TRANSIT	TAXI TRANSIT	JEEPNEY TRANSIT	SHORT-TERM PUBLIC PARKING	LONG-TERM PUBLIC PARKING	PARK & RIDE	OBR TERMINAL	PLAZA	BACLARAN MARKET	GATEWAY	CANAL BOARDWALK	REDEMPORIST STATION	LRT CARRIAGEWAY & COLUMN
LRT CARRIAGEWAY & COLUMN	/	/	/	/	/	/	/	/	/	X	O	/	O	
REDEMPORIST STATION	O	O	O	O	O	O	O	O	X	X	O	O		
CANEL BOARDWALK	X	X	X	X	/	/	X	X	O	X	O			
GATEWAY	X	X	X	X	/	/	X	X	O	O				
BACLARAN MARKET	X	X	X	O	/	/	X	X	O					
PLAZA	X	X	X	/	/	/	X	/						
OBR TERMINAL	/	/	/	/	/	O	O							
PARK & RIDE	/	/	/	/	O	O								
LONG-TERM PUBLIC PARKING	/	/	/	/	X									
SHORT-TERM PUBLIC PARKING	/	/	/	/										
JEEPNEY TRANSIT	/	/	/											
TAXI TRANSIT	/	/												
FX TRANSIT	/													
MOA SHUTTLE														

KEY  
O - COMPATIBLE  
X - NOT COMPATIBLE  
/ - NEUTRAL



Redemptorist station surrounded by the OBR terminal and the Park & Ride facility. The spatial relationship between the station and the terminal is to place them close to each other but have them separated by a physical barrier. This relationship is important because these are two major transit facilities in the city and together these establish a transit hub in the neighborhood. Access points and crosswalks between these two components should be wide and numerous, in order to accommodate high volumes of pedestrian traffic. The use of a physical barrier between these components is important to separate vehicle type and user spaces.

The Park & Ride facility is connected to the station in order to provide long-term parking for LRT passengers and to provide direct access to the station. Contained in Redemptorist Station are jeepneys. The main reason for this is jeepneys are the most commonly used type of transit in the country. This type of transit offers commuters access into internal areas of a neighborhood, cheaper fares, and frequent availability on the street. Therefore, by containing these in the station area, commuters have quick access to them and more space is available to accommodate its volume. The other transit components such as taxis, FXs and MOA shuttle are contained in the Park & Ride facility to offer choices in transit services and provide accessible transfer points. Collectively, all of the transit components and Redemptorist station are grouped together to reinforce the transit hub in the area and allow the neighborhood to become an important node in the city's transit network.

For public spaces, the gateway is the best place to start. As shown in Figure 1, the Gateway is located beside Redemptorist station and can be viewed as a common link between public spaces and transit facilities. Here, the Gateway interacts with the station, the plaza, and the canal boardwalk. The location of the Gateway is determined by the location of the canal waterway, which happens to be adjacent to the proposed station. The Gateway connects to the canal boardwalk to continue with pedestrian pathways and is located adjacent to the plaza to associate with the activities of the space.

The market is directly accessible to the plaza, short-term parking, and long-term parking. Physical barriers surround both

the market and plaza in order to separate vehicles from pedestrians, and to help create safer spaces for each. Collectively, all of the public space components are grouped together to help pedestrians circulate through the area while having direct connections to transit facilities.

#### **1.4 CASE STUDIES and DESIGN PRECEDENTS**

There are five case studies used in this practicum for design precedents. These studies discuss issues related to transit and pedestrian traffic in high density, mixed-use streets. More specifically, these studies focus on reuse of an abandoned elevated structure, the design of a LRT station, and vehicle dominated streets. In each of these studies, a brief overview of each study is presented, followed by an outline of design interventions used to resolve the issues and found useful in the masterplan. The last three case studies are presented by Project for Public Spaces (1998) from the report entitled, *Transit-friendly streets: Design and Traffic Management Strategies To Support Livable Communities*.

##### **CASE STUDY 1: HIGH LINE IN NEW YORK CITY**

This study focuses on the High Line, an abandoned elevated railway that runs through mixed-used neighborhoods in New York. Owned by the City of New York, the High Line travels 1.5 miles across the city and 28.88 ft above the streets. It is 9-18 ft wide and holds 6.7 acres of abandoned space atop its concrete and steel, carriageway. In 2003, Friends of the High Line Organization launched an international design competition for entries to design the High Line by reusing the abandoned elevated trainway. The objectives of the competition are to vision the reuse of the High Line as an elevated open space that provides

universal access to the space above and surrounding areas. At the same time, provide design treatments to spaces beneath the High Line (Friends of the High Line, 2008).

Winners of the competition, Field Operation and Diller Scofidio + Renfro (Friends of the High Line, 2008) created a design concept entitled, *“Keep it...”: Wild, Slow, Simple and Quiet*, in which the following design interventions were found relevant to the practicum.

#### **For LRT carriageway**

- Create a distinct character for the High Line preserving the High Line as a functional infrastructure and allowing public access.
- Reveal and reuse components of the structure in its original form and material so that visitors get educated about its history.
- Use native plantings on the structure to improve the quality of the air and reduce the city’s heat island effect.

#### **For Public spaces**

- Provide areas to meander, sit, gather, and gain access from below.
- Provide a safe environment for visitors.
- Provide public access to the High Line and the neighborhood.
- Provide clear sightlines between the High Line and the surrounding area.
- Promote environmental sustainability by using water conservation and harvesting technologies, and reduce heat island effect by planting vegetation.

## **CASE STUDY 2: BANGKOK LRT SYSTEM IN BANGKOK.**

This study is located over highly dense, traffic congested streets in Bangkok. The issue in this study is alleviating the city's congested streets (Stungo, 1995). Design interventions found relevant to the project are the following:

### **For LRT carriageway, columns and station.**

- Carriageway and station are located 8 m above street level.
- A single row of columns is used to support the carriageway.
- Stations are located over the street and near intersections for easy access.
- The station is divided into two levels: Mezzanine level and platform-train level. The platforms are 130 m long.
- The architecture of the stations is designed “*to establish a sense of identity in the visual chaos of central Bangkok.*” (Stungo, 1995).
- To use bridges in the future to connect the station with commercial developments alongside it.
- Circulation within the station is ADA accessible by placing access points consistent in each level.

## **CASE STUDY 3: NW 23RD AVENUE IN PORTLAND, OREGON.**

This study is located in a high density, mixed-use neighborhood that focuses on a major transit street in the area. The issues in this study focus on the conditions of the street that is creating traffic congestion between waiting passengers and pedestrians, and causing illegal parking of vehicles in bus lanes (Project for Public Spaces, 1998). Design interventions found relevant to the project are the following:

**For Transit facilities**

- Curb extensions are created at bus stops to provide spaces for pedestrians to wait, to accommodate site furniture, and to help regulate traffic speed.
- Curb extensions add 30 ft to the sidewalk's length, which help bus passengers to unload on the sidewalk rather than the street.
- The provision of transit amenities at transit stops such as trash receptacles, shelter, and benches.

**For Public spaces**

- Curb extensions add 8-10 ft to the width of the sidewalk, which creates a pleasant walking environment for pedestrians.
- Parking lanes act as a buffer between vehicle traffic and pedestrians.

**CASE STUDY 4: MAIN STREET IN ROCHESTER, NEW YORK.**

This study is located in an economic center of the city and focuses on Main Street, a major transit hub in the area. The issues in this study are pedestrian conflicts at bus stops, the absence of safe pedestrian spaces, and lack of transit amenities (Project for Public Spaces, 1998). Design interventions found relevant to the project are the following:

### **For Public spaces**

- Reducing the number of traffic lanes from six to four, in order to give more space for the sidewalk.
- Sidewalks are widened to accommodate pedestrian circulation and transit amenities such as a heated shelter, benches, trees/planting, and lighting.

### **For Transit facilities**

- Developing parallel streets around Main Street, to acts bypass streets for through-going traffic and alleviates traffic on Main Street.

## **CASE STUDY 5: DAVIS SQUARE IN MASSACHUSETTS.**

This study is located in a densely populated streetcar suburb in New England. Davis Square has a complex six-point intersection, consisting of four major collector roadways, two smaller roadways, and old freight railway (Project for Public Spaces, 1998). In 1982 the new Red Line Station was proposed to extend into Davis square in order to redevelop the square as a viable shopping district while preserving the residential character of the neighborhood (Ibid, 1998). During the construction of the station, the city agencies focused on transforming the streets by providing additional on-street parking, improving the Square's appearance and pedestrian access throughout the area, and creating opportunities for commercial development. However, during the construction of the station, residents and city agencies were worried about the station's impact on changing the character of the neighborhood and increasing traffic in the square (Ibid, 1998). To solve these issues and achieve their goals, the city implemented the following design interventions. These are also found to be relevant to the project.

### **For Public spaces**

- A plaza is located between the station's two entrances. It functions to serve as the center of Davis Square, to provide spaces to rest, wait and gather, and to encourage use of the new station.
- The old freight railway is transformed into bike paths, linear parks, pedestrian pathways, and designated bus way.
- Sidewalks are widened to 10 meters, paved with brick pavement, and lined with proper light fixtures to encourage pedestrian use.
- Refuges are added to the crosswalks to provide safe pedestrian circulation through the square.
- Public art is incorporated in the plaza to create a sense of community.

### **For Transit facilities and streets**

- Major collector streets are converted to one-way or two-way travel lanes, lined with one-hour meters on both sides.
- The station promotes subway transportation rather than private vehicles in the square.
- Entrances to the station function as waiting areas, and transfer point for passengers between the subway and the buses.

The case studies presented in this section focus on re-examining the role of transit vehicles in the street, and the relationship between pedestrian and vehicle space on the street. The interventions summarized from the literature review, provide precedents for developing the masterplan, and for programming the relationship between pedestrians and vehicles in the street.

## **PART TWO: THEORETICAL FRAMEWORK**

The theoretical framework for the development of the masterplan is influenced by the works of three authors:

- Pedro Hormigo and Takao Morita discusses gapspace and elevated structures,
- Allan Jacobs outlines boulevard guidelines, and
- M. C. Escher explains perspectives.

### **2.1 LRT STRUCTURES**

*“Though man is dwarfed by its size of these immense structures, he regains his relationship to them by participation in their use.” (Halprin, 1966)*

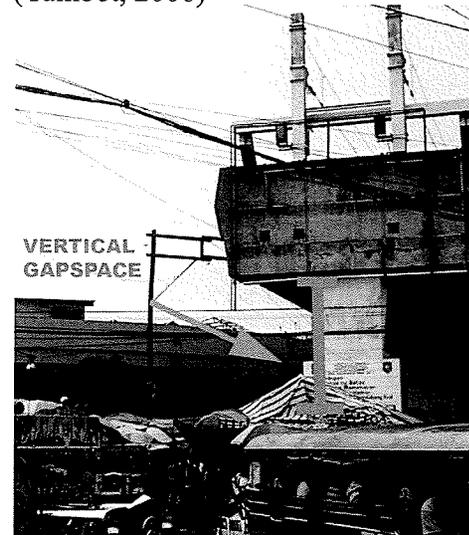
One of the concerns of elevated structures in the landscape is their ability to create gapspace underneath them. Pedro Hormigo and Takao Morita (2004) explain gapspace are empty spaces created as a by-product from highway or railway implantations built during urban expansion, such as: at-grade, depressed roads or elevated railway. These gapspace not only create empty spaces in the urban core but also generate functional separations and spatial interruptions in the continuity of the urban fabric. Hormigo and Morita (2004) further explain gapspace are important elements in the city and have the potential to promote urban growth in the urban core and surrounding areas. In order to achieve this, the gapspace under the elevated railways need to be responsive to street level activities and be filled with activities that can bring “*new life and role*” into the urban core (Hormigo and Morita, 2004).

In their research, Hormigo and Morita discuss permeability, accessibility, and interactivity between people and gapspace under the elevated railway. Permeability and accessibility relates to the physical and visual connections a person has to the space under the elevated railway. Interactivity relates to the physical occupation of a person in the space under the elevated railway (Ibid, 2004). As shown in the image of the current LRT line, pedestrians already have permeability, accessibility, and interactivity with the spaces under the LRT. However, these qualities usually occur at intersections where they are clearly marked. Along the rest of the LRT line, these qualities are limited because of certain barriers such as walls, fences, or the absence of crosswalks or refuge that prevent pedestrians from utilizing the space under the LRT. In the second image, vertical gapspace are seen above the market. These gapspace have the potential to provide permeability, accessibility, and interactivity under the LRT by filling in the spaces with existing street activities or new ones. However certain conditions of the street and LRT need to be considered before filling in the gapspace such as: whether the street needs more space to accommodate existing activities

Figure 2. Gapspace utilized under the current LRT (Yambot, 2007)



Figure 3. Potential gapspace under the LRT. (Yambot, 2006)



or create new ones, or whether the LRT's height can support additional spaces above the street. If these conditions are met, then utilizing the vertical gaps under the LRT is possible. This would then help to integrate the LRT in the street while supporting users and their activities.

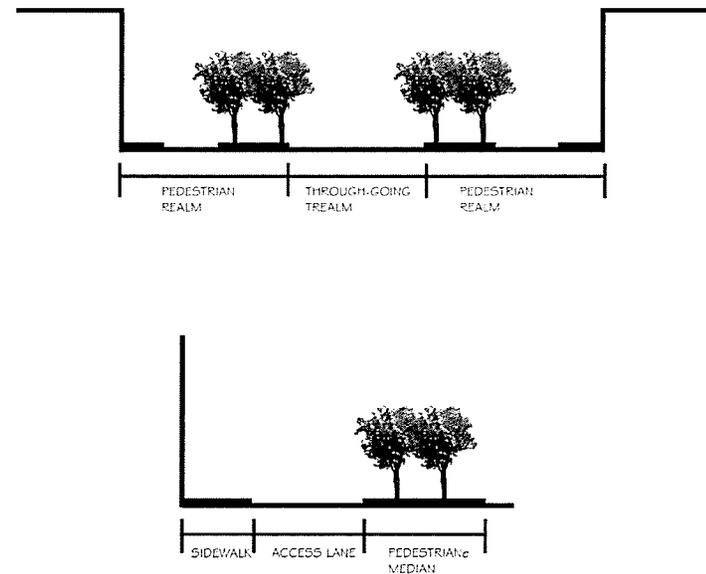
## 2.2 BOULEVARD GUIDELINES

*Boulevards are unique monumental links between important destinations in the city.”  
(Jacobs, et.al.,2004)*

Roxas Boulevard is a major street in Metro Manila that joins popular destination places such as Redemptorist Church, Mall of Asia, and Manila Bay together. For the segment of the boulevard located in the project area, it is important to coordinate and control traffic between pedestrian and vehicles.

In his book, *The Boulevard Book* (2004), Allan Jacobs explains that the boulevard is divided into two realms: the through-going realm and the pedestrian realm (illustrated in Figure 4).

Figure 4. Boulevard realms: Through-going (above) and pedestrian (below). (Jacobs, et.al.,2004)



The through-going realm is the central roadway of the boulevard and is devoted to relatively fast through-going traffic. It may include a central median strip to separate the opposing streams of traffic and provide spaces for pedestrian access across the street. The pedestrian realm is located on either side of the through-going realm. They extend from the building frontage along the street to the edges of the through-going realm. The pedestrian realm is divided into three areas: 1) a narrow access lane- used to accommodate slow moving, local traffic, 2) a sidewalk and 3) a tree-line pedestrian median. The intention of the pedestrian realm is to develop its space into local residential and commercial purposes so that it can balance with the fast through-going realm (Jacobs *et al.*, 2004).

The overall goal with boulevard design is to create a well-functioning street, and to create an image for the boulevard as a single entity rather than individual streets that are self-catering (Ibid, 2004). Jacobs prescribes the following guideline for boulevard design, which is also relevant to Roxas Boulevard.

### **GUIDELINES FOR ROXAS**

- There should be a strong division between the pedestrian realm and through-going realm by using a continuous median.
- The pedestrian realm should only have one access lane. This discourages non-local vehicles to use this lane as the bypass lane and encourages them to slow down. It should have a rough surface material to impede travel speed.
- The median along the pedestrian realm should provide various amenities such as kiosks, waiting stops, proper lighting, signs, or seating spaces to encourage people to use the space and strengthen the realm.
- Parking should be provided along the access lane to help slow down vehicle traffic and provide access to adjacent buildings.
- Vehicle access to the pedestrian realm should be located at intersections so that these do not disrupt through-going traffic

and pedestrian movement.

- The trees should be closely spaced (minimum of 12 feet and maximum spacing of 25 feet) and continue up to (a few feet away from) the intersection.
- To maintain the visual permeability across the street, trees with dense foliage below eye level should not be used. But rather trees that provide a canopy cover.
- The median should encourage pedestrian crossing across the street by providing clearly marked and safe refuge spaces.

In the redesign of Roxas Boulevard, a pedestrian realm needs to be established to help reduce traffic conflicts between pedestrians and vehicles. Once this is established, spaces for pedestrian and transit activities can be organized thoughtfully in the street.

## 2.3 PERSPECTIVE and SPACE

*“...Streets are themselves sites of cultural practices, and part of our knowledge of the city because they link sites of activity, of cultural practice, make escape possible and are a step to somewhere else, and someone else. They connect all sorts of sites and everyday cultural life, both spectacular and humble.” (David Crouch, 2004).*

The Baclaran neighborhood has an impression of being a chaotic, dirty, and unsafe place. This impression is based on: 1) the condition of the street, in which its spaces are filled with mixed-modes of vehicles, pedestrians, and market activities, and 2) by the experiences in these spaces. In the project area, the quality of spaces in the street, especially those under the existing LRT structure, need to be improved in order to change the impression of the neighborhood. M.C. Escher’s approach to sketching perspective is used as a guide to help express the visual quality and perception of spaces under the LRT structure, and the quality of the LRT.

Figure 5. Existing condition of the junction at Roxas Boulevard and Redemptorist Road.  
(Yambot, 2007)



Escher's approach to perspective is based on three points of view or images: the nadir, zenith, and distant point (illustrated in Figure 6). The nadir is a point directly below the viewer's feet; the zenith is a point directly above the viewer's head; and distant point is one or more points directly at the viewer's eye level (Bool *et al*, 1981). Escher explains to capture a single continuous image of the space, these three points are connected using curved lines. The intention of this approach is to allow the viewer's eyes to pass from the zenith to the nadir, through 180 degree, in order to produce an encompassing image of the space. (Bool *et al*, 1981).

To capture the viewer and to engage them to the space (both perceived and actual), the image should communicate a good sense of space that provides insight to its quality and stimulates their imagination to create a positive impression. The spaces under the LRT carriageway are designed using the form and scale of the LRT to influence the qualities of a space such as view, light, and degree of enclosure. The images produced for these spaces will help to improve the impression of the neighborhood.

Figure 6. An illustration of Escher's three points of view and curved lines of perspective (Bool *et al*, 1981)

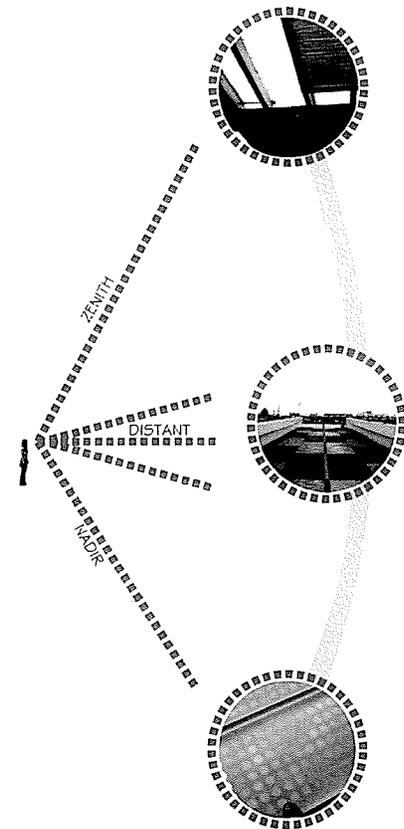


Figure 7. Inspiration for the qualities of a space: view, light, and degree of enclosure. (Yambot, 2007)



## PART THREE: SITE INVENTORY and ANALYSIS

### 3.1 SITE CONTEXT

The Baclaran neighborhood is located in Pasay City and it covers an area of 63.72 hectares. The neighborhood includes places such as Redemptorist Church, Baclaran Market, and Baclaran Station. The reclaimed land includes places such as the Mall of Asia, SM headquarters, Islamic Grand Mosque, SLR wholesale, a Catholic Church and Chinatown Night Market.

Baclaran neighborhood is well known for hosting two famous landmarks: the Shrine of Our Mother of Perpetual Help at Redemptorist Church and Baclaran Market. Redemptorist Church is open 24 hours a day, 7 days a week, and every Wednesday people from all over the city converge at the church to attend the novena. Baclaran Market is also open 24 hours a day, 7 days a week, and everyday the streets are lined with vendors selling various items from clothing, houseware to electronic goods.

Other buildings found in the neighborhood include Berma mall and Baclaran mall (both housing additional vendors in an

Figure 8. Site context (*above*). Study area (*below*).  
(Google™ Earth, accessed June, 2007),



air-conditioned environment), and popular restaurant chains such as McDonalds, Tropical Hut, Jolibee, KFC and Goldilocks.

### **3.2 SITE HISTORY**

Baclaran was named after fishing gear used by the fishermen, called BAKLAD, which means a rattan fence placed by fishermen around the young fish. This fence kept the fish contained until they become big enough to be sold in the market. The fishermen in Baclaran made these baklads in the water so people started calling the place “Bakladan”. The “d” between the vowels was interchanged for an “r”. Hence, “Bakladan” came to be called “Baclaran” (Source: <http://www.paranaquecity.com/baclaran.html>, accessed August, 2006).

This story tells the important relationship between the market and water, which should be commemorated in the redesign of the area.

### **3.3 ENVIRONMENTAL FEATURES**

#### **3.3.1 CLIMATE**

Climate in the Philippines is tropical and maritime. The average temperature is 26.6 degrees Celsius. The coolest months is January, with a mean temperature of 25.5 degrees Celsius, and the warmest month is May, with mean temperature of 28.3 degrees Celsius. The average monthly relative humidity varies between 71% in March and 85% in September. During the months of March to May, when temperature and humidity attain their maximum levels, the country is especially uncomfortable. Precipitation produces high rainfall and typhoons are common in these areas (Source: <http://kidlat.pagasa.dost.gov.ph/cab/cab>.

htm, accessed December 2006).

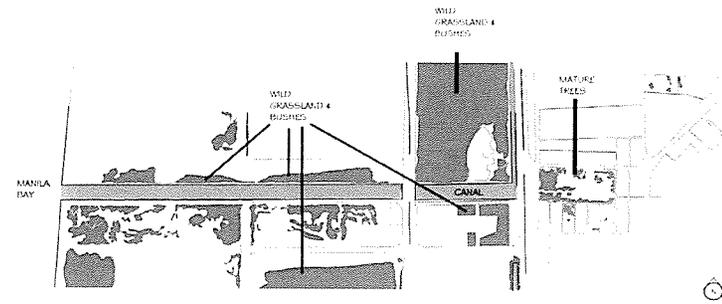
Prevailing surface winds in the Philippines blow from the northeast during the months of November-March. During the months of June-September, the winds blow from the southwest. During monsoon season, wind direction is from the northeast during the NE monsoon and southwest during the SW monsoon and from the east during the Pacific Trades (Source: <http://kidlat.pagasa.dost.gov.ph/cab/cab.htm>, accessed December 2006).

A concern with climate is heat island effect. As development progresses on the reclaimed land, hard surfaces are slowly replacing vegetation and absorbing rather than reflecting the sun's heat. This causes surface temperatures and local temperatures to rise, which create uncomfortable outdoor spaces for people. To counter this effect, vegetation should be restored to cool down surface temperatures and local temperatures. To create comfortable outdoor spaces for people, spaces should provide shade from the sun and protection from rain.

### 3.3.2 VEGETATION

In the Baclaran neighborhood most of the area is covered by buildings and the only place where vegetation is found is on the Redemptorist Church property. It includes mature trees as high as seven meters and planters outlining the parking space. On the reclaimed land, naturalized grassland and bushes are scattered throughout where development has not yet occurred.

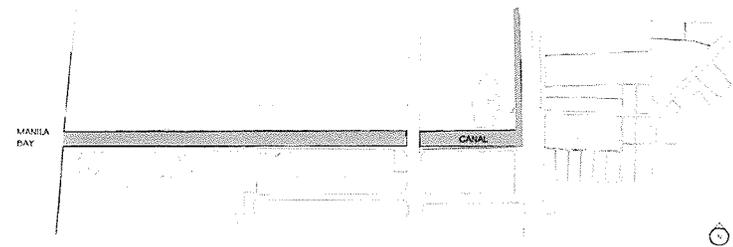
Figure 9. Vegetation map.



### 3.3.3 HYDROLOGY

Manila Bay is located west of Metro Manila. It has a coastline of 190 km, a surface area of 1,700 square kilometers, an estimated volume of 28.9 billion cubic meters, and an average depth of 17 m. The bay drains about 17,000 square kilometers of watershed areas composed from 26 catchments. Along the eastern coastline, it receives runoff from the rivers in Metro Manila (Wolanski, 2006).

Figure 10. Manila Bay and canal water.



From Manila Bay heading east towards the city, a 40-45 m wide canal flows perpendicular to Roxas and continues to

i The width of the canal is an approximation based on the proposed LRT extension plan and site pictures.

flow north between the reclaimed land and Roxas Boulevard. The width in this space is approximately 10-15 m<sup>ii</sup> and three meters<sup>iii</sup> deep.

A concern with the canal is its behavior during high tides and flood season. Currently, there have been no reports about its condition but it would be worth investigating before any development.

### **3.4 LRT COMPONENTS AND STANDARDS**

The current LRT system travels from Monumento Station, north of Metro Manila to Baclaran Station, south of Metro Manila. The line services 18 stations through the Metro, with Monumento and Baclaran functioning as terminal stations. Baclaran station is located northeast of Redemptorist Road on Taft Ave, and stands over the street three storey high with access provided by a flight of stairs. The stairs lead to the concourse level where tickets are purchased, passengers then proceed to the platform level for the trains. The standard characteristics of the station, carriageway and columns are as follows (UNCHS,1993):

#### **For carriageway and columns**

- Two way track in the carriageway approximately 7.5 m wide<sup>iv</sup>.
- Height of carriageway above street level is 7 m. It is supported by a single row of columns.
- Distance between concrete columns is 20 m.<sup>v</sup>
- Minimum curve radius is 170 m in the main line and 25 m in the depot area. However, it can be as low as 10 m in tight

ii, iii The depth of the canal is an assumed based on site visits.

iv Width of carriageway is based on Manila LRT Line 1 Extension Plan (2006).

v Distance between columns is based on Manila LRT Line 1 Extension Plan (2006).

and sinuous right of ways.

- Maximum grade of carriageway is held at 4%.
- The entire structure is built to withstand a Richter 8 magnitude earthquake.

#### **For station**

- Average distances between stations are 825 m.<sup>vi</sup>
- It has two levels: Concourse- ticket level and platform level. Access to each level is by stairs or escalators.
- The platform level consists of a center carriageway with two side platforms along its edges, 100 m long and 3.5 m wide. These platforms are elevated 80 cm above the train tracks.
- Hours of operation are 5:00 am – 9:30 pm.

### **3.5 LAND USE and CIRCULATION**

The fabric of Baclaran neighborhood is generally mixed-use, including religious institutions, commercial businesses and residential areas. In older parts of the neighborhood, it is common to see buildings occupied with businesses on the main level and residence on the upper levels. In the reclaimed land, this area is currently developing into a mixed-use area filled with commercial, religious, and academic institutions.

<sup>vi</sup> Distance for proposed stations in the Manila LRT Line 1 Extension Plan (2006) may differ.

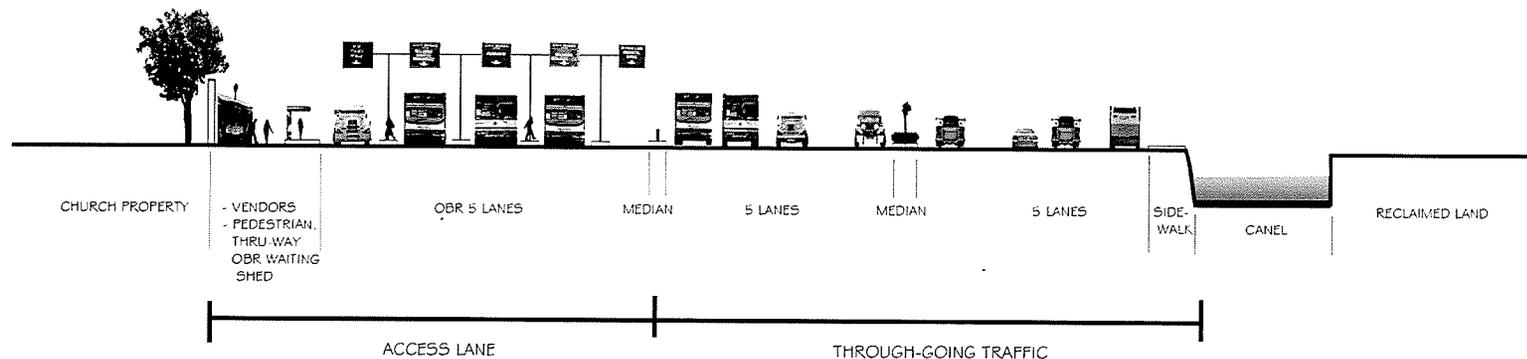
### 3.5.1 VEHICULAR CIRCULATION

There are two important streets in the neighborhood and study area: Redemptorist Road and Roxas Boulevard. Both streets are highly used and densely filled by pedestrian and vehicle traffic.

#### ROXAS BOULEVARD

Roxas Boulevard is one of the main arterial routes in the city. It is oriented north and south, and carries various types of vehicles such as: buses, freight trucks, jeepneys, taxis, FX jeeps, Mall of Asia shuttles and private vehicles. The street is divided into two realms: the through-going traffic and access lane. The through-going traffic is divided into ten lanes: five lanes heading north and five lanes heading south. Adjacent to the through-going traffic and separated by a fence is the access lane. It functions

Figure 11. Existing cross-section of Roxas Boulevard.



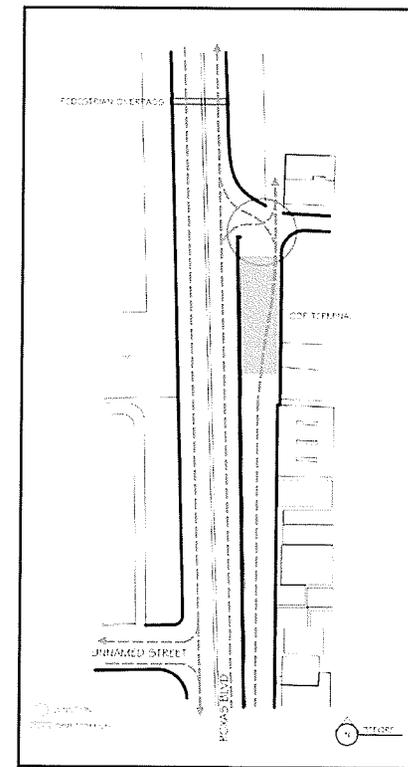
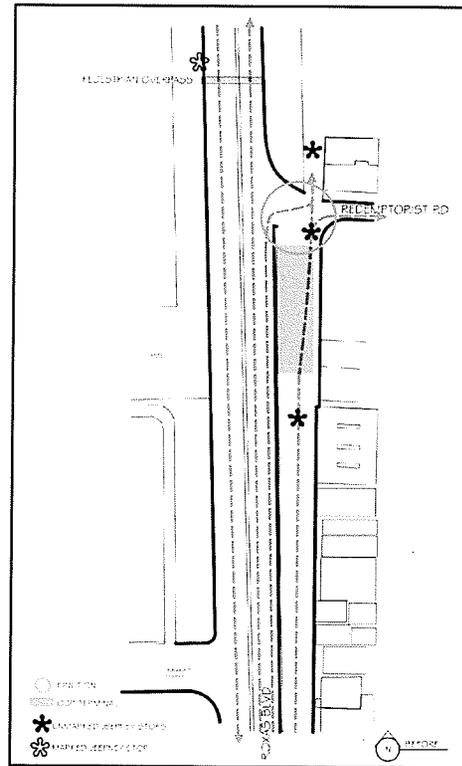
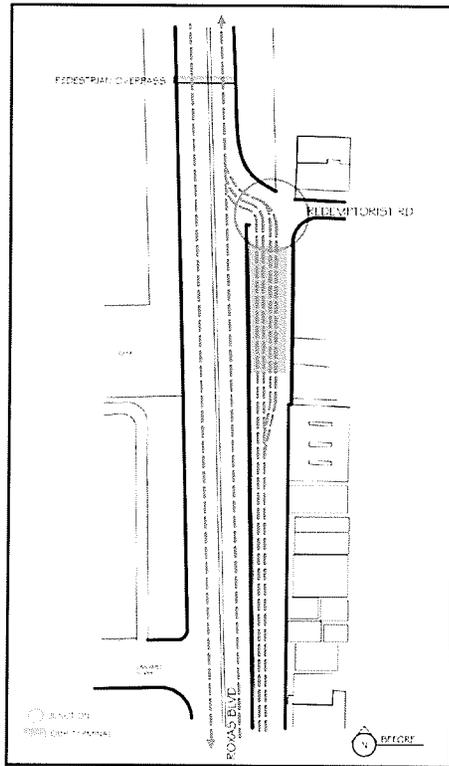
N ROXAS BLVD SECTION  
P.L.O.

to provide access to businesses along Roxas and the Organized Bus Route Terminal (OBR). The OBR terminal includes five lanes: one lane for jeepneys, taxi and private vehicles, and four lanes for citywide buses. In the study area, there are no traffic lights for the general traffic or priority signals for the OBR terminal. However, there are traffic enforcers to assist vehicles at the junction, where Redemptorist and Roxas join.

There are five types of transit vehicles servicing the neighborhood: buses, jeepneys, taxis, FXs and Mall of Asia (MOA) shuttles. As illustrated in the circulation plan for buses (Figure 12-*left*), buses travel north and south on Roxas. Buses access the OBR terminal via the access lane and queue up at the waiting area as pedestrians load and unload. Buses then exit the OBR terminal at the junction then merge into traffic. For jeepney circulation (Figure 12-*middle*), access in the neighborhood and market is located at the junction and at the OBR terminal. Jeepneys entering at the junction could either turn left and proceed north into the neighborhood or proceed east into Redemptorist Road. For jeepneys entering at the OBR terminal, these would access the outer most right lane before proceeding north into the neighborhood or east into Redemptorist Road. For all other transit vehicles entering the access lane (Figure 12- *right*), these would follow the same circulation pattern as jeepneys. However, jeepneys, delivery trucks and private vehicles appear to be the only types of vehicles permitted to travel through Redemptorist Road<sup>vii</sup>. In the study area, there are very few signs to locate transit stops and waiting areas. The only exception would be at the OBR terminal for buses and at the north side of the pedestrian overpass for all transit vehicles.

vii Based on observations recorded during site visits.

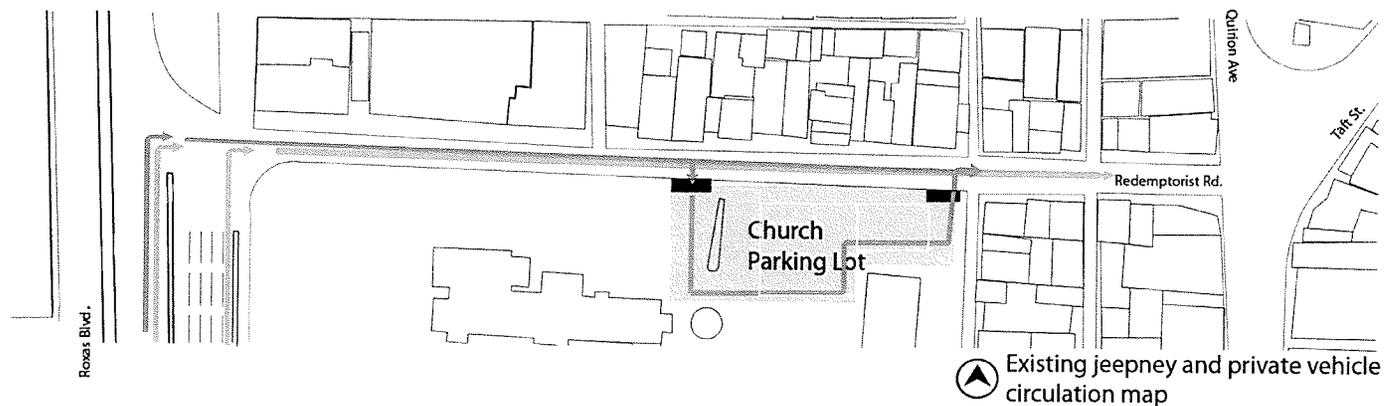
Figure 12. Existing circulation route of buses (left), jeepneys (middle) and taxis/ FXs/ MOA shuttles (right) through Roxas Boulevard.



## REDEMPTORIST ROAD

Redemptorist Road is a secondary route in the neighborhood. It is approximately 345.3 m<sup>viii</sup> in length, oriented east- west, and jeepneys, delivery trucks, and private vehicles are the more common types of vehicles traveling through the street. The street is 11 m<sup>ix</sup> wide at the west end near Roxas, and expands to 15 m<sup>x</sup>, at the east end. Both ends of the street are impromptu jeepney stops, in which passengers can unload at the west end or load on the jeepney at the east end. The entrance to the Redemptorist Church parking lot is located midway along Redemptorist Road and the exit is located further east along the street. Gates identify both access points. Although the facility is reserved for church visitors, it is common to see market shoppers with private vehicles use the space.

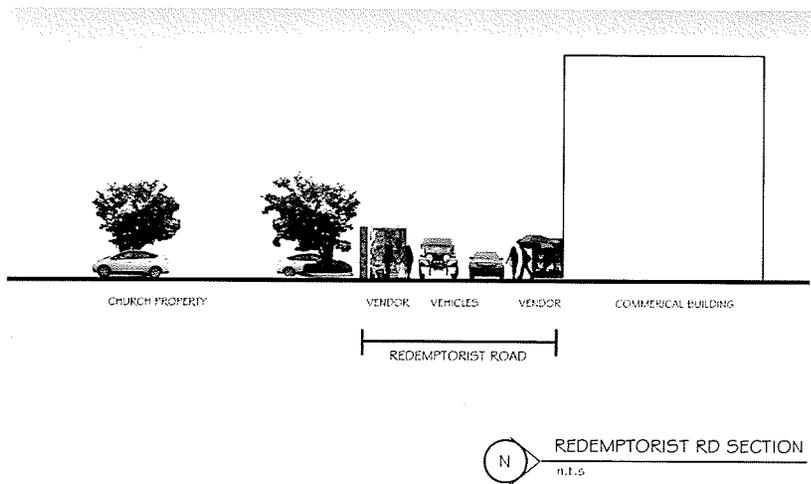
Figure 13. Circulation route of jeepneys and private vehicles through Redemptorist Road.



viii Length of street is based on Manila LRT Line 1 Extension Plan (2006).

ix,x Width of street is based on Manila LRT Line 1 Extension Plan (2006)

Figure 14. Existing cross-section of Redemptorist Road (left). Redemptorist Church parking lot (right). (Yambot, 2007)



## OTHER STREETS

In the neighborhood context there are other major streets that connect with the site: EDSA Avenue- north of Roxas, Macapagal Boulevard- located on the reclaimed land and east of Roxas, and an unnamed street that branches east off of Roxas.

EDSA Avenue is another arterial route in the city and it travels in an east-west direction. It provides access to the Metro Rail Transit (MRT) interchange (which connects to the LRT system), and provides direct access to the Mall of Asia. EDSA and the unnamed street intersect perpendicularly to Roxas and Macapagal Boulevard. Macapagal Boulevard travels in a north-south direction with five lanes running in both directions.

Figure 15. Other streets in the larger context: EDSA Ave, Macapagal Boulevard, and unnamed street. (Google™ Earth, accessed June, 2007)



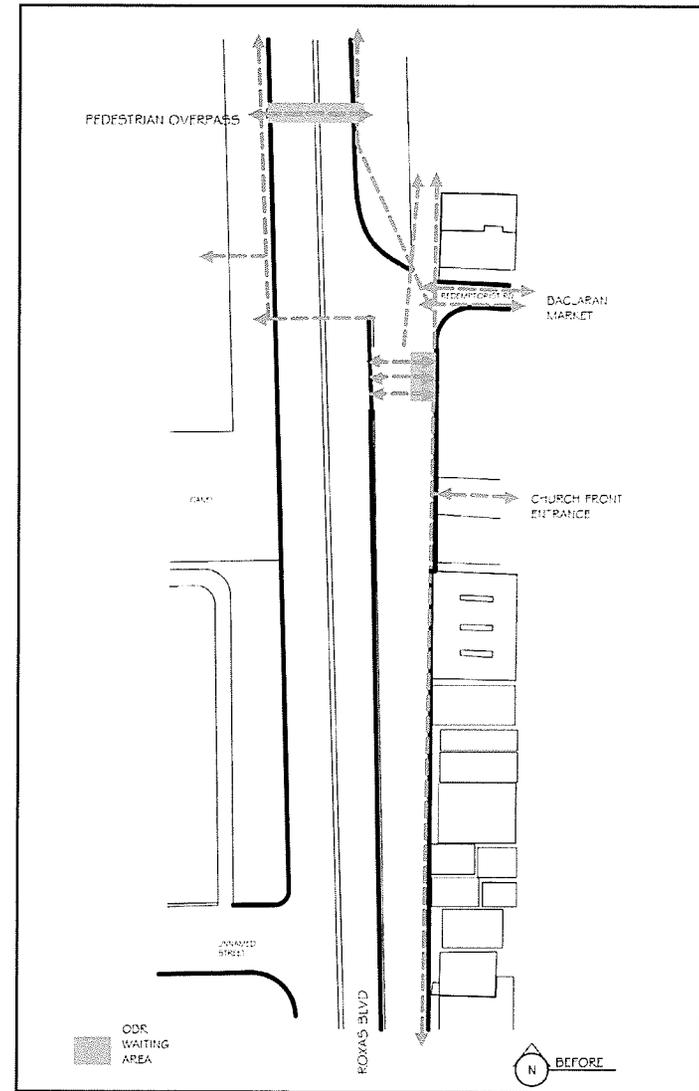
### 3.5.2 PEDESTRIAN CIRCULATION

Existing pedestrian circulation throughout the site focuses around the OBR terminal, the pedestrian overpass and the market.

As illustrated in Figure 16 for the pedestrian circulation plan, pedestrians circulate between the OBR terminal waiting area, the church entrance, and northern areas of the site including the pedestrian overpass. The pedestrian overpass is located approximately half a block north of Redemptorist and it provides access across Roxas. It rises 4.5 m above the street and is accessible by stairs on both sides. Jaywalking is an illegal activity, and signs and fences are placed on the median to deter it. However, because few ground level crosswalks are located along Roxas, and the overpass is not user friendly and distant, jaywalking is a common scene.

At the foot of stairs (on the north side of the overpass) is the transit loading area for all transit vehicles. This area includes a sidewalk roughly four meters wide and a low wall occupied by waiting commuters and illegal vendors (or mobile vendors with makeshift stalls or carts). Transit signs are posted to indicate

Figure 16. Existing pedestrian circulation along Roxas Boulevard.



general loading areas, but none specifically to transit type or provide route information. As a result, pedestrians are seen walking up and down the sidewalk, trying to gain a clearer view and access to transit vehicles. During peak hours, these activities become more difficult as vehicles congest<sup>xi</sup> in the area and force pedestrians to encroach onto the street. In such a narrow space, it becomes difficult for pedestrians to circulate safely and efficiently.

Along Redemptorist, pedestrian circulation is oriented east-west. Side streets, located perpendicularly from the main street, lead pedestrians to other areas of the neighborhood. There are no sidewalks except at the east end of Redemptorist, which rises to three to four steps leading to stores' entrances. Vendor stalls outline the edges of the street and each occupy an area of 6.25 square meters. Illegal vendors and their carts also outline the edges of the street.

<sup>xi</sup> Most of the transit systems in Philippines are privately owned so drivers need to capture as many passengers throughout the day in order to make their quota. This often creates bottlenecks along the streets.

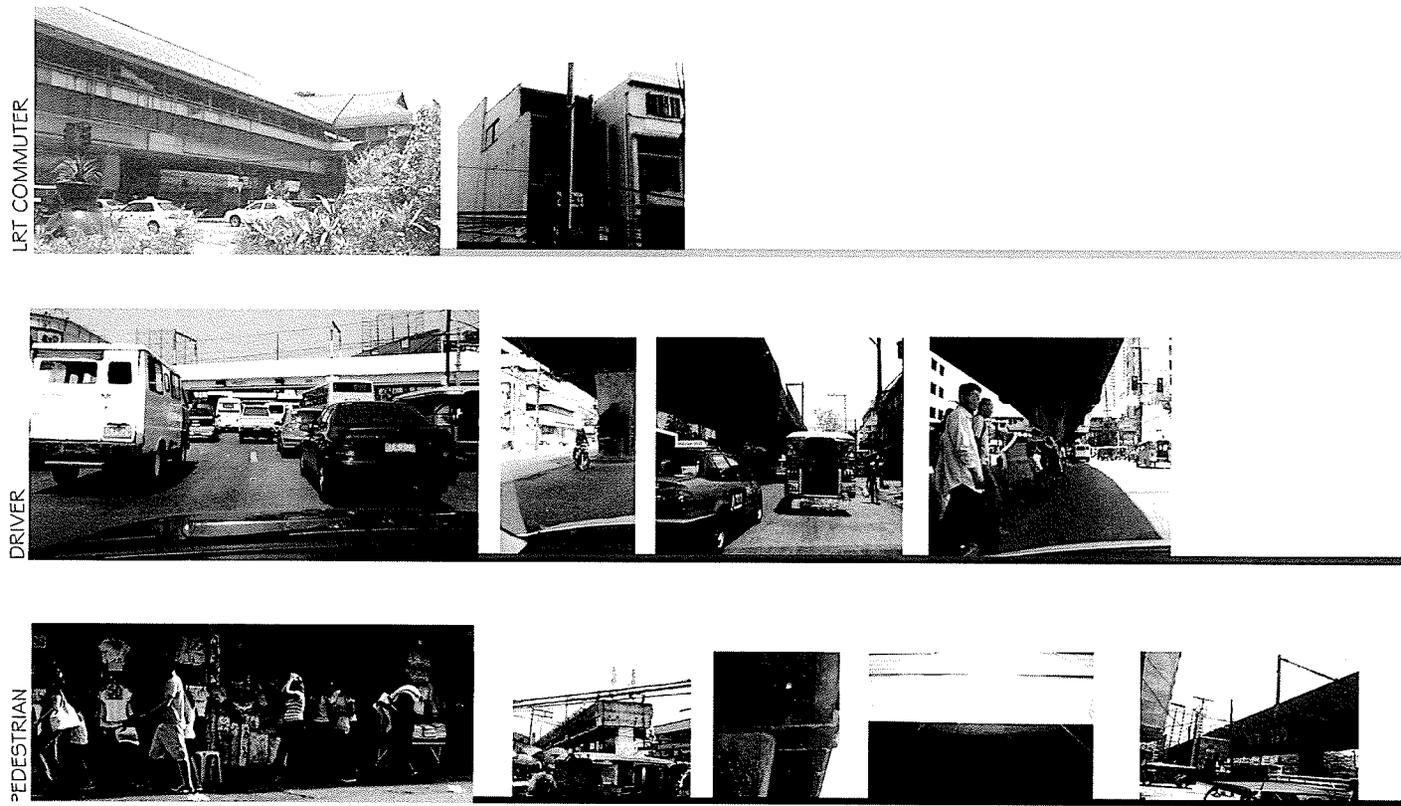
Figure 17. Pedestrian overpass (*top*). North view from overpass (*middle*). Activities on Redemptorist Road (*bottom*). (Yambot, 2006 & 2007)



### 3.6 EXPERIENTIAL QUALITIES OF THE SITE and THE LRT.

To understand the potential impact of the LRT in the streetscape, a site investigation was undertaken to evaluate the qualities of the street and LRT structure as impressions of users experiences. These impression are taken from three points of view: pedestrian, driver and LRT train passenger.

Figure 18. Types of users on the street: pedestrian, driver and LRT passenger. (Yambot, 2006)



### **3.6.1 PEDESTRIAN**

As a pedestrian, the LRT gives an impression of dominance. While walking under the LRT, everything about it was seen. From its overhead wires, undercarriage, columns and surfaces, the structure dominated the street. It created wide shadows and cool spaces to walk under, unfortunately the street surfaces were left with exhaust grime and it prevented fresh air from circulating.

The first impression of the site was chaos. While walking through its spaces, all of the senses in the body were overwhelmed by the number of different activities and things presented. Jeepneys and buses were everywhere. Pedestrians and vehicles confronted each other trying to move down the congested streets. Shoppers and vendors watched, waited and chatted during transactions. Lone individuals sat in the church and prayed, and hundreds of people slithered past each other trying to reach the OBR or jeepney terminal. As shown in Figure 19, certain spaces left a lasting impression. The qualities recorded for each space helps to identify quality spaces for pedestrians and vehicles when the LRT extends into the street (Table 1). The key is to retain the positive qualities and remedy the negative ones. By doing this, there is an opportunity to accommodate accessible pathways, open spaces or retain views of the local architecture or natural features.

Figure 19. Location of recorded spaces in the site area. (Google™ Earth, accessed June, 2007)



Table 2. Description of record spaces in the site area.

LOCATION	POSITIVE QUALITIES	NEGATIVE QUALITIES
<b>a) Redemptorist</b>		
1. At the east end junction under the existing LRT carriageway	1. Openess and light after leaving the canopy of the carriageway.	1. Darkness, enclosure, and no air while under the carriageway.
2. At the west end junction of the street facing west.	2. Openness and expansion of views across Roxas.	2. Chaos and attentiveness needed to maneuver through pedestrian and vehicle traffic.
3. North entrance to church.	3. Fresh, quiet, and escapism into church's parking facility filled with mature trees and planters.	3. Obstructed access through the gates. Unidentifiable.
4. Church parking facility	4. Fresh green space within the site. Friendly public space.	4. Difficulties in accessing and circulating through the space especially on Wednesdays. Bystanders align the entrances. Unwelcoming.
<b>b) Roxas</b>		
5. East entrance of church.	5. Grand walkway to access church. Public spaces filled with benches, trees for shade and lighting. Inviting, a place to pause and reflect.	5. Obstructed access through the gates and views of the church.
6. OBR terminal	6. Identifiable location with its signs and pink color. A waiting shed is provided. Terminal dominates area.	6. The waiting shed is not user friendly. There are no transit information, times and routes, and no proper lighting. Attention required.
7. Pedestrian overpass	7. Provide safe access across Roxas. Higher points of view, of the area. Fresh air.	7. Not universally accessible. No proper lights.
8. Sidewalk along the west side of Roxas	8. Views of the canal water, reclaimed land and Grand Mosque. Palm trees line the sidewalk. Openness to the site and water.	8. Abandoned space. No rest stops or shade along its length.

### 3.6.2 VEHICLE DRIVER

There were different impressions of the LRT while driving underneath it. The underside of the carriageway created large shadows and gave an impression of enclosure. The columns in the middle of the street created a rhythm and gave an impression of anticipation. It was difficult to see pedestrian crosswalks or U-turn slots because there were no visible markers to indicate their location and the center columns blocked views to them. In addition, it was difficult to see the names of buildings along the edges of the street because of the carriageway.

The opportunities from this point of view is to use the rhythm of the columns to change the rhythm of pedestrian and vehicle movement, and to use the shadow of the LRT to delineate space between pedestrians and vehicles.

At EDSA Avenue, where the current LRT line spans across the width of the street, the carriageway covers the sky. Fortunately, this is an opportunity to use the LRT as a threshold into a different part of the city.

Figure 20. The LRT structure (*top*) and station (*bottom*) in the background acts as a threshold into a different area of the city. (Yambot, 2006)



### **3.6.3 LRT PASSENGER**

The station is a place where pedestrians and passengers enter, exchange, and depart. From a LRT passenger point of view, the experience created a sense of detachment from the street, and sense of attachment to the city. A sense of detachment occurred while going up to the platform level as the noise, smell, and activities of the street faded away. A sense of attachment occurred during the train ride as the train traveled through the city and gave expandable views of the city. The opportunities from riding the LRT is to use its height to escape the activities of the street, and create visual links to distant places in the neighborhood, such as Mall of Asia or Manila Bay.

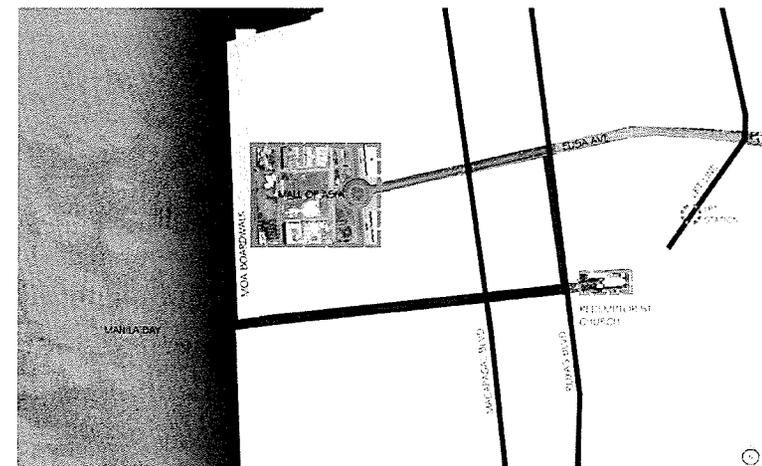
### 3.7 CONCEPT

#### 3.7.1 NEIGHBORHOOD SCALE

At the neighborhood scale, the neighborhood has three strong axis: EDSA avenue, Roxas Boulevard and the canal waterway. These axis are currently influencing the organization of the entire area and vehicular circulation patterns. At the same time, these axis are bridging the gap between the city and Manila Bay. The neighborhood also has strong anchors: the Mall of Asia (MOA) and Redemptorist Church (Figure 21- *top*). These anchors pull people and bring them to the edges of the water, to edges of the city, and to places intended for pedestrian activities such as the MOA boardwalk and Baclaran market.

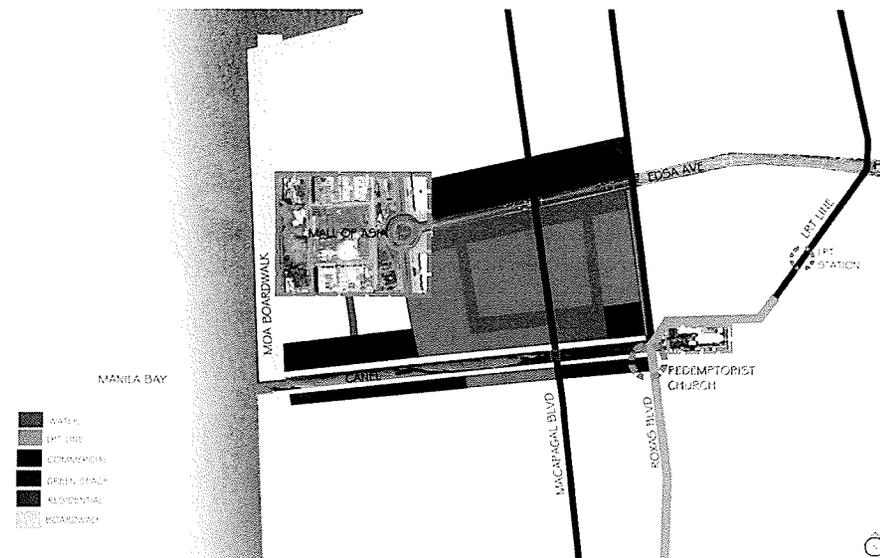
However, the neighborhood is incomplete because it is vehicle-oriented. This is evident by the lack of infrastructure designed for pedestrians such as sidewalks, facilities to wait, rest or sit, and accessible transfer points between transit systems. As a result, a gap is created between the anchors and axis, or the interconnectivity between pedestrian and vehicles circulation (Figure 21-*bottom*). However, there is a solution to link them

Figure 21. Conceptual neighborhood plan. Anchor points in the neighborhood (*top*). A gap in the neighborhood (*bottom*). (Google™ Earth, accessed June, 2007)



together, which is to shift the focus onto the canal and develop it to become pedestrian-oriented. Development along the canal's edges should provide pedestrian scale activities, buildings, spaces, and networks. The proposed development plan suggests the following interventions (Figure 22): 1) the activities at MOA, Redemptorist Church and Baclaran market are extended along the edges of the canal. 2) The tension created between EDSA and the canal is relieved by developing the interior spaces into commercial and residential areas, and 3) greenways and pedestrian pathways are used to link the areas together and encourage pedestrian movement throughout. As a result, the neighborhood becomes filled and comprised of interconnected networks for pedestrians and vehicles. Moreover, with the LRT extending through the site particularly near the canal, it strengthens and signifies the importance of the canal for the neighborhood.

Figure 22. Proposed development plan for the neighborhood. (Google™ Earth, accessed June, 2007)



### 3.7.2 LOCAL SCALE

At the local scale, the site is also summarized as vehicular oriented. Currently street conditions show traffic congestion is disabling pedestrians from moving efficiently and safely through the site. As Aprodicio Laquian (2005) explains about traffic congestion, *“This mix-modes of transport are greatly reducing the mobility (of traffic) because the slow-moving vehicles set the pace and flow of traffic on urban roads.”* (Laquian, 2005). To encourage pedestrian orientation but still have mixed-modes of transport, the site should define areas for each user type and accommodate spaces for their activities. This will create order in the street and enable both pedestrian and vehicles to navigate efficiently through the site.

This projects falls under the broader context of urban development such as Transit Oriented Development (TOD). Although the objectives of the project do not focus on TOD specifically, it does include a major component of it, the LRT station. Therefore, it is important to mention what TOD is and how it is relevant to the local area.

Generally, TOD is described as a mixed-use, mixed-density, half-mile area surrounding a transit station (*Dittmar & Ohland, 2004*). As explained by Peter Caltrope and Shelly Poticha (2004), the urban design principles associated with it are:

- *“Organize growth on a regional level to be compact and transit-supportive.*
- *Place commercial, housing, job parks, and civic uses within walking distance of transit stops.*
- *Create pedestrian-friendly street networks that directly connect local destination.*
- *Provide a mix of housing types, densities, and costs.*
- *Preserve sensitive habitat, riparian zones, and high-quality open space.*
- *Make public spaces the focus of building orientation and neighborhood activity.*
- *Encourage infill and redevelopment along transit corridors with existing neighborhoods.”* (*Dittmar & Ohland, 2004*).

All of these principles are applicable to the design of the local area because these promote accessibility, connections and variety between spaces and uses. Dittmar & Ohland (2004) explain that aside from the physical form of TOD, a place

functions well if its spaces and uses are integrated. This means matching the types of uses (including the needs and activities of its users), with the function of the place (Dittmar & Ohland, 2004). To help define the function of the area, a list of site issues and opportunities are outlined and examined in conjunction with the components in the project. This will help generate a concept plan for the local area.

### **3.7.3 SITE ISSUES**

#### **CONSTRAINTS IN THE SITE**

There are five physical constraints in the site:

- The width of Roxas must contain 10 lanes to accommodate through-going traffic.
- Parking spaces adjacent to the church, business and market are important for proximity and access to these places.
- The junction between Roxas and Redemptorist is an important access point in and out of the area.
- The position of the LRT columns span throughout the area and the LRT station occupies a large area of the site.
- Redemptorist Road is an important collector route in the neighborhood so it has to accommodate jeepneys.

#### **OPPORTUNITIES IN THE SITE**

There are eight opportunities in the site:

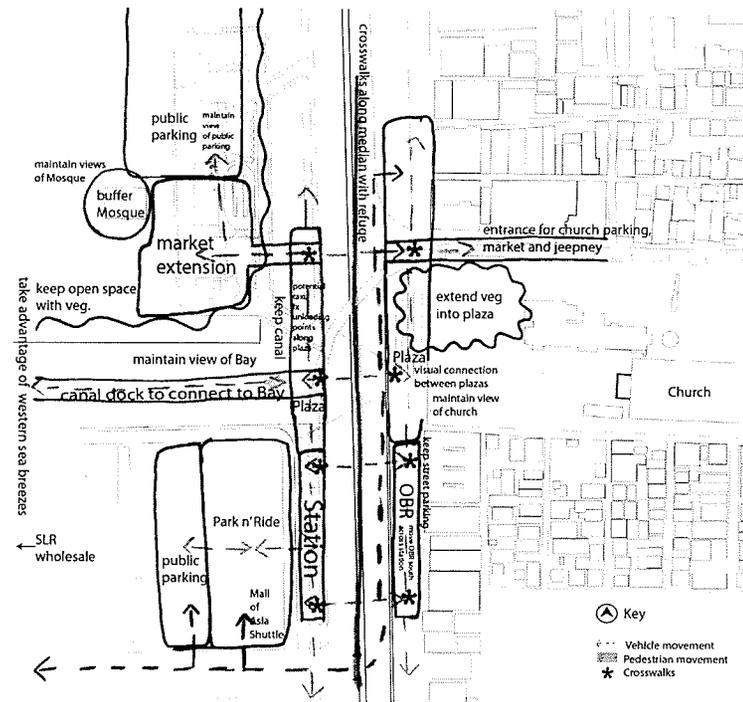
- The OBR terminal can be relocated.

- Open spaces adjacent to the Grand Mosque can be available as an extension of the market.
- Space around natural features of the site such as the canal and grasslands can be developed to take advantage of its views and open space.
- Space is available to designate specific through-going traffic.
- The vertical space under the LRT can compensate for the space occupied by the LRT along the site.
- The activities in the vertical spaces can be an extension of existing activities on the street or can be new activities for the street.
- The columns can be used as a functional element to support activities of the street.
- The median strip can be used as refuge for crosswalks along Roxas.

### 3.7.4 CONCEPT PLAN

The site is defined to function as a mixed-used, pedestrian scaled environment with access to various transit systems. As shown in the conceptual plan (Figure 23), the OBR terminal is relocated south, across Redemptorist Station. From the station, public parking is provided at two areas: one north, adjacent to the Grand Mosque and one south, adjacent to the station. The parking facility located in the north caters to visitors of Baclaran market and the Grand Mosque. The parking facility located in the south caters to visitors of the station, Redemptorist Church and local businesses along Roxas. Heading north, the station links to the Gateway, which is the entranceway into the city. The Gateway takes advantage of views towards Manila Bay and Redemptorist church, and of the western sea breezes. The Gateway connects to the open space available on the reclaimed land, which is an extension of the activities in Baclaran market. Placed throughout this space are natural features such as water and plantings to create a fresh and open environment. Access across Roxas is provided by numerous ground level crosswalks with refuge stops on the median.

Figure 23. Conceptual site development plan.



## PART FOUR: DESIGN

The design of the masterplan is divided into three parts: 1) the LRT structure: columns and carriageway, 2) Roxas Boulevard and 3) Redemptorist Road. Two features inspired the layout for the masterplan: the momentum of the LRT train as it travels through the area, and the water in the canal.

As the train follows the carriageway along Redemptorist and Roxas, it follows the curvature of the line. Along this segment the momentum of the train can either continue to follow the current line or it can break away from it and create new and multiple lines of flow. These imaginary lines or curves are imprinted in the landscape to define different spaces. In the masterplan, these lines and curves create pedestrian pathways, vehicle lanes, buildings, a ramp, and public spaces. Water and bamboo are used to reflect the importance of the canal to the neighborhood, and are featured in the Gateway and plaza.

Figure 24. Inspiration for the layout of the masterplan.

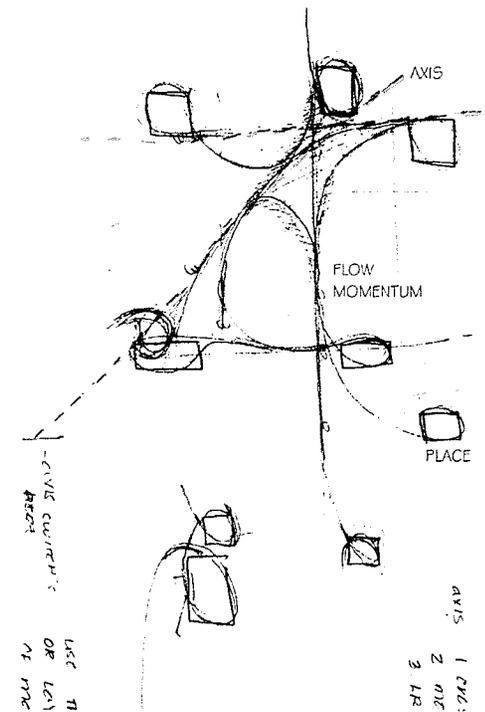
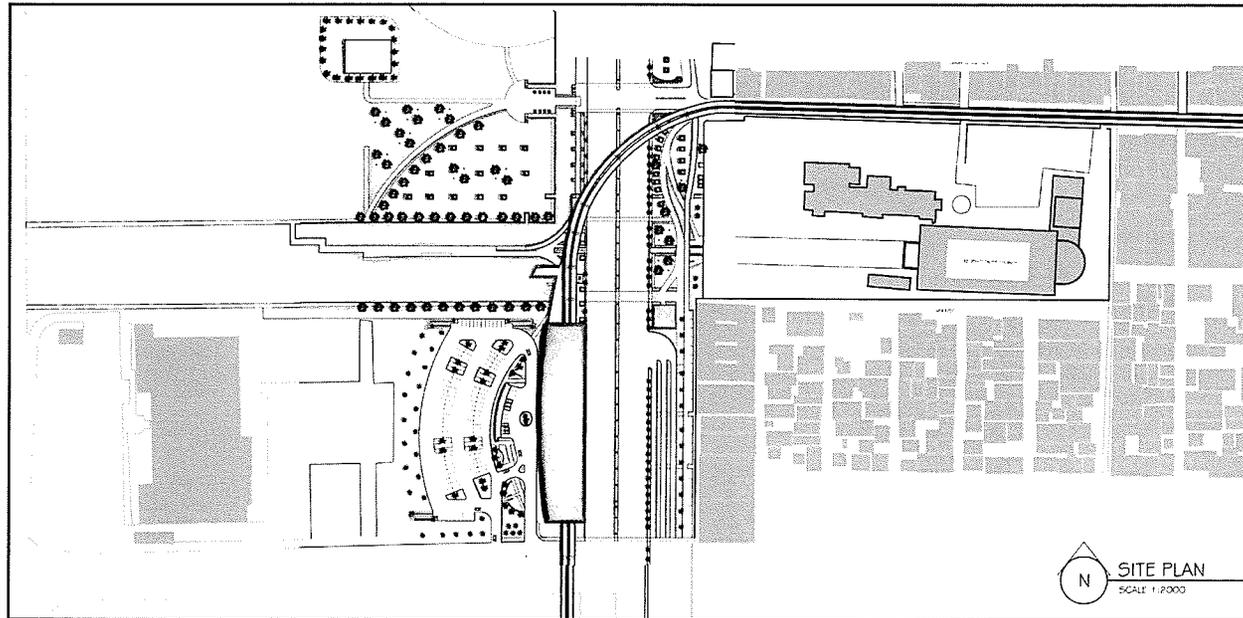


Figure 25. Proposed masterplan for the site in the local context.



#### **4.1 LRT COMPONENTS**

The idea behind the redesign of the LRT is to make the structure appear less dominant in the street. To achieve this, three interventions are proposed: remove parts of the LRT; make parts of it appear to be “breaking away” from the structure; and use materials for attached features that allow light to shine through.

The LRT structure is divided into two components: the carriageway, and columns. The redesign of these components illustrates ways of integrating LRT in the street so it can support its own functions, and at the same time support the activities of the street.

#### 4.1.1 CARRIAGEWAY

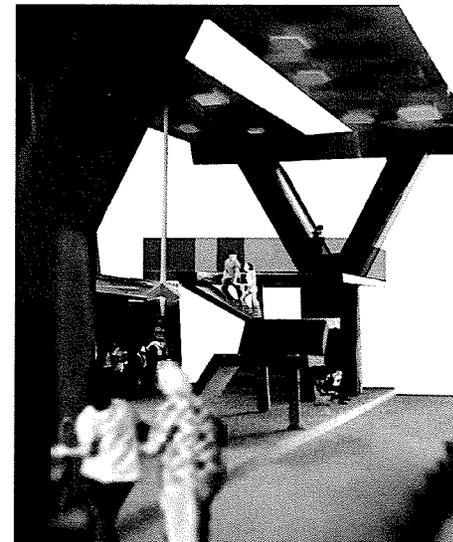
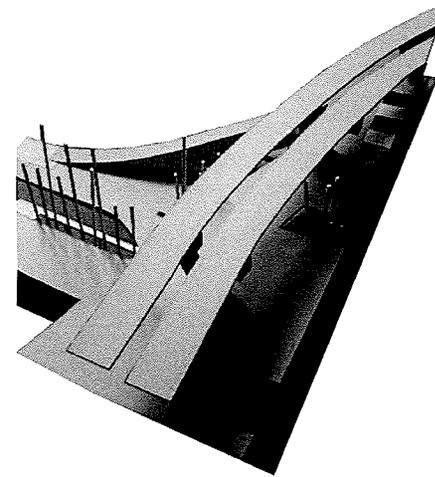
*“...It is important to understand the relationship of scale to space and space for light and air required for the spaces to be acceptable.”  
(Halprin, 1966).*

Design interventions:

- The entire span of the carriageway is divided into two by removing the area between the tracks. This allows natural light to shine through and air to circulate, and still provide shade. This creates a sense of openness, and ephemeral quality for the street. That is, throughout the course of the day, as the sun’s angle changes and the clarity of the sky changes, so does the condition of the street.
- The underside of the carriageway is the ceiling for the street. The ceiling varies in height to differentiate spaces under the LRT and its texture adds character to the structure and street. This texture is created by a layer of light-transmitting concrete blocks<sup>xii</sup>, which are spaced

xii The blocks do not interfere with the structural properties of the LRT structure according to the properties of the material.

Figure 26. Aerial view of the proposed carriageway (*top*). Ground view of the carriageway’s ceiling (*bottom*).



organically on the ceiling to appear to be “breaking away” from the LRT. These blocks provide artificial lighting to the entire length of Redemptorist Road.

- Along the rest of the LRT line, the underside of the carriageway is flat with light transmitting blocks used to synchronize with the moving LRT train. A colorful landscape is created as the train travels through the city.

#### 4.1.2 COLUMNS

*“Rhythmic patterns provide continuity and leads us to anticipate what comes next. Any break in the pattern announces and emphasize the importance of the interrupting element or interval”.*

*(Ching, 1996)*

The form of the column is influenced by the carriageway and the rhythm of the street. The repetition of the columns creates spaces in between that form a rhythm in circulation patterns, user activities and edge conditions. The column’s form utilizes the vertical gaps under the LRT by providing more spaces to continue the rhythm of the street. The general characteristics for

the proposed columns are:

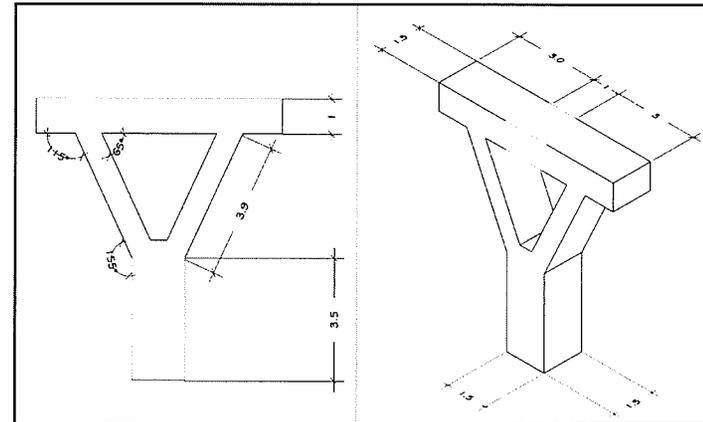
- The form of the columns resembles a “Y” shape to support the two trains above and a mezzanine level midway. The two arms of the column are connected by a supporting brace to stabilize the structure. The height of the mezzanine is 3.5 m above street level and provides new spaces for existing activities or new ones. This level provides occupants of the space views of the street and landscape.
- The horizontal spaces between the columns are used to define different spaces and activities such as parking, seating, market stalls, and jeepney stops (*See 4.3 Redemptorist Road, and 4.2.2 Public Spaces for more detail*).

#### 4.1.3 REDEMPTORIST STATION

Design interventions:

- The design of the station is an adaptation of Bangkok’s LRT system. The main difference between the two stations is the position of Redemptorist station above the edge of the street. Entrances and exits are located at the north and south

Figure 27. Proposed form for the LRT column.



ends of the station, and adjacent to pedestrian crosswalks for easy access. An exit point is located in the center of the station, to provide commuters access to transfer points such as the jeepney- located on the east side of the station, and taxi or FX- located on the west side of the station. The provision of numerous access points around the station prevents crowding and bottlenecks on the street. Signage and security lights at these access points and transit facilities are important to create a safe place for users.

- Circulation patterns within the station show some similarities to Bangkok's station, with the exception of the center stairway exit and use of escalators (Figure 29).
- Access between each level is universally accessible with the provision of escalators, ramps and elevators, in order to give options of step-free access. Spiral escalators are used to give the station a unique character amongst the other stations in the line.
- The flooring material for each level is frosted translucent glass. This provides light and privacy for each level.

Figure 28. Proposed features for Redemptorist Station. (Yambot, 2007)

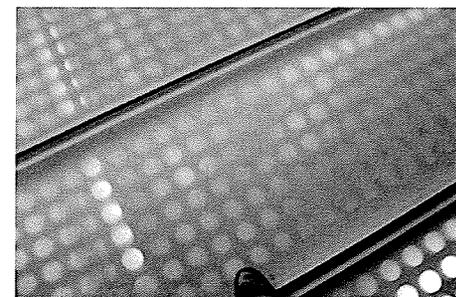
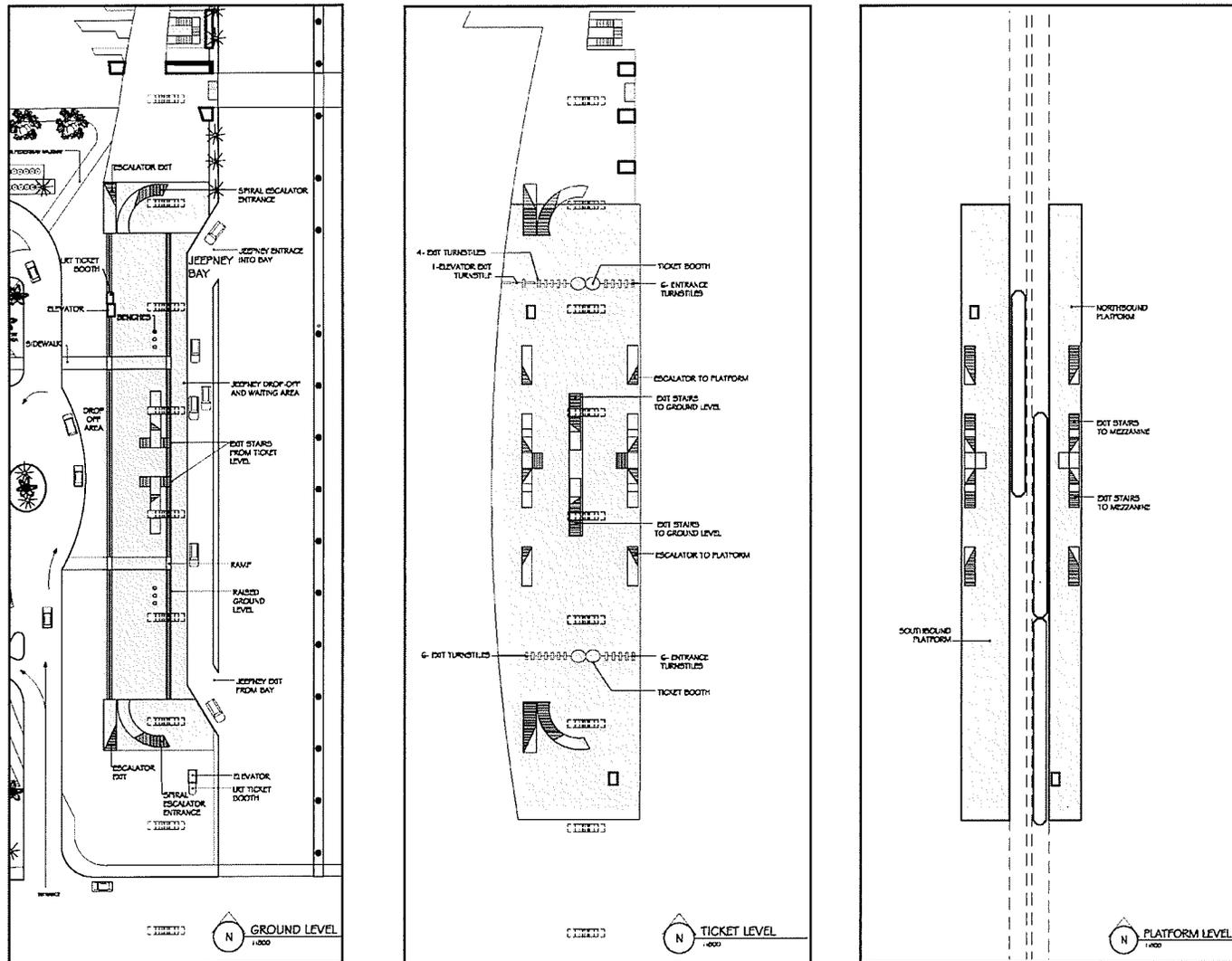


Figure 29. Proposed layout for Redemptorist Station.



## 4.2 ROXAS BOULEVARD

### 4.2.1 THE STREET

Roxas Boulevard is divided into two realms: a through-going realm and a pedestrian realm (Figure 31). The edges of the through-going realm are lined with *Veitchia merrilli* - Manila Palm tree, used to unify the street. The median is planted with *Yucca flaccia*, *Agava stricta var.nana*, and other plants to deter jaywalking. Both visual and physical permeability and accessibility are provided across the street by numerous crosswalks and refuge spaces on the median. As illustrated in the pedestrian circulation plan (Figure 30), five crosswalks utilize the length of the street to provide numerous access points for pedestrians. This helps to strengthen the boulevard's function as a pedestrian-oriented street. Traffic circulation patterns in the street are discussed in the section 4.2.3 Transit Facilities.

Figure 30. Proposed pedestrian circulation plan

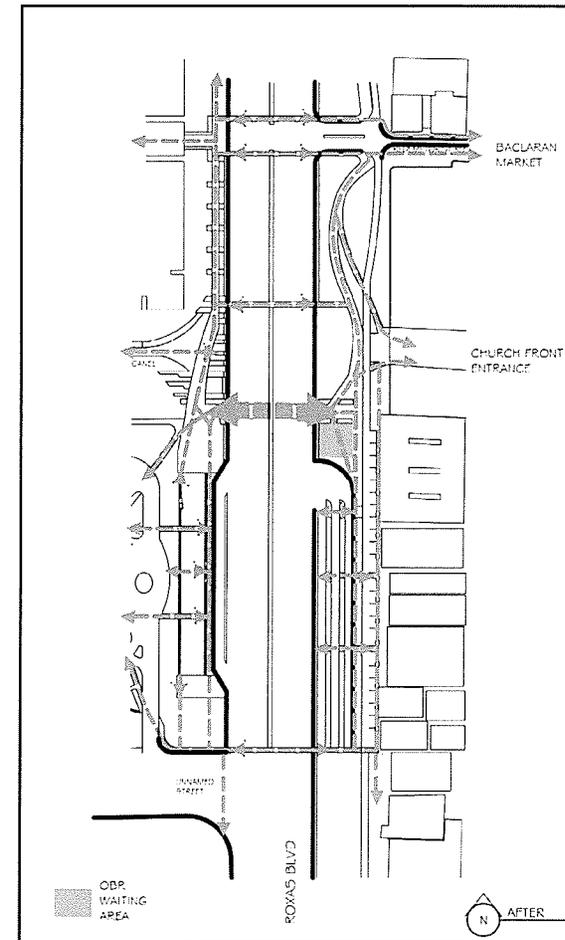
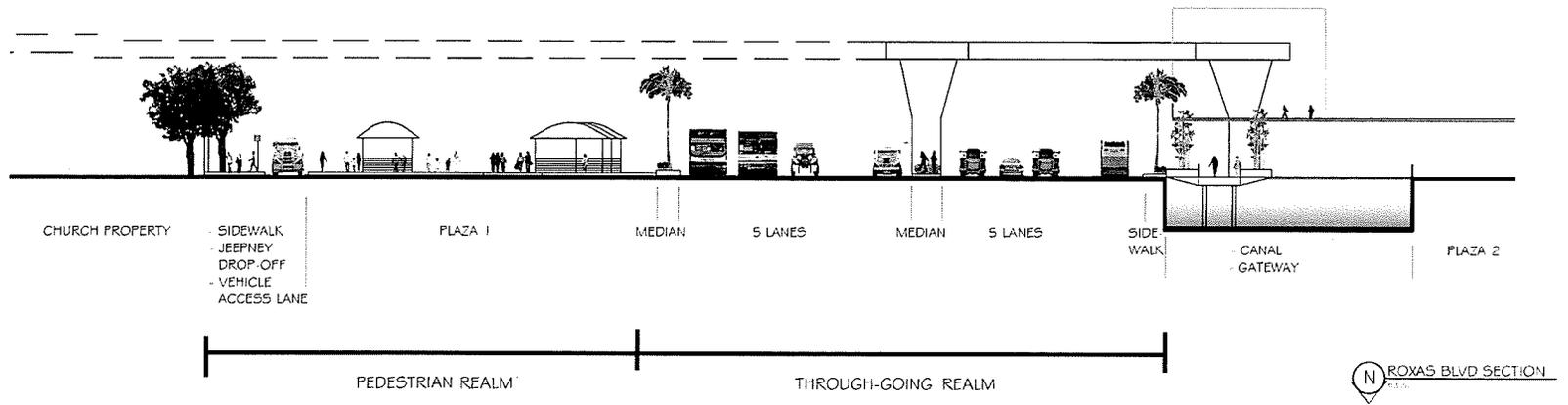


Figure 31. Proposed cross-section for Roxas Boulevard.



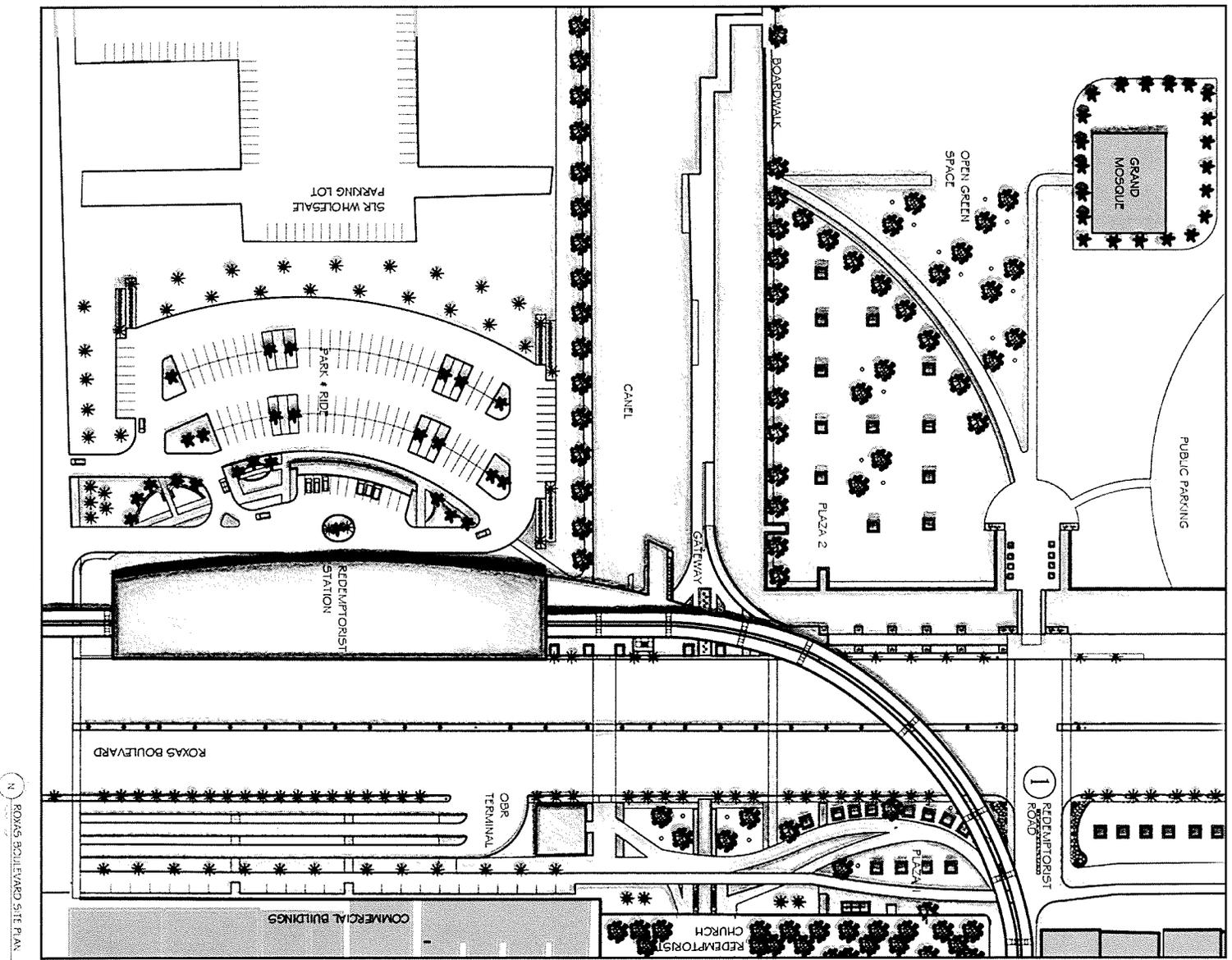


Figure 32. Proposed masterplan for Roxas Boulevard.

## 4.2.2 PUBLIC SPACES

### CANAL BOARDWALK

*“ The approach to the great city should be celebrated as a dramatic event. Once inside, the pace and scale of free-flowing movement is slowed and arrested.” (Halprin, 1966)*

Design interventions:

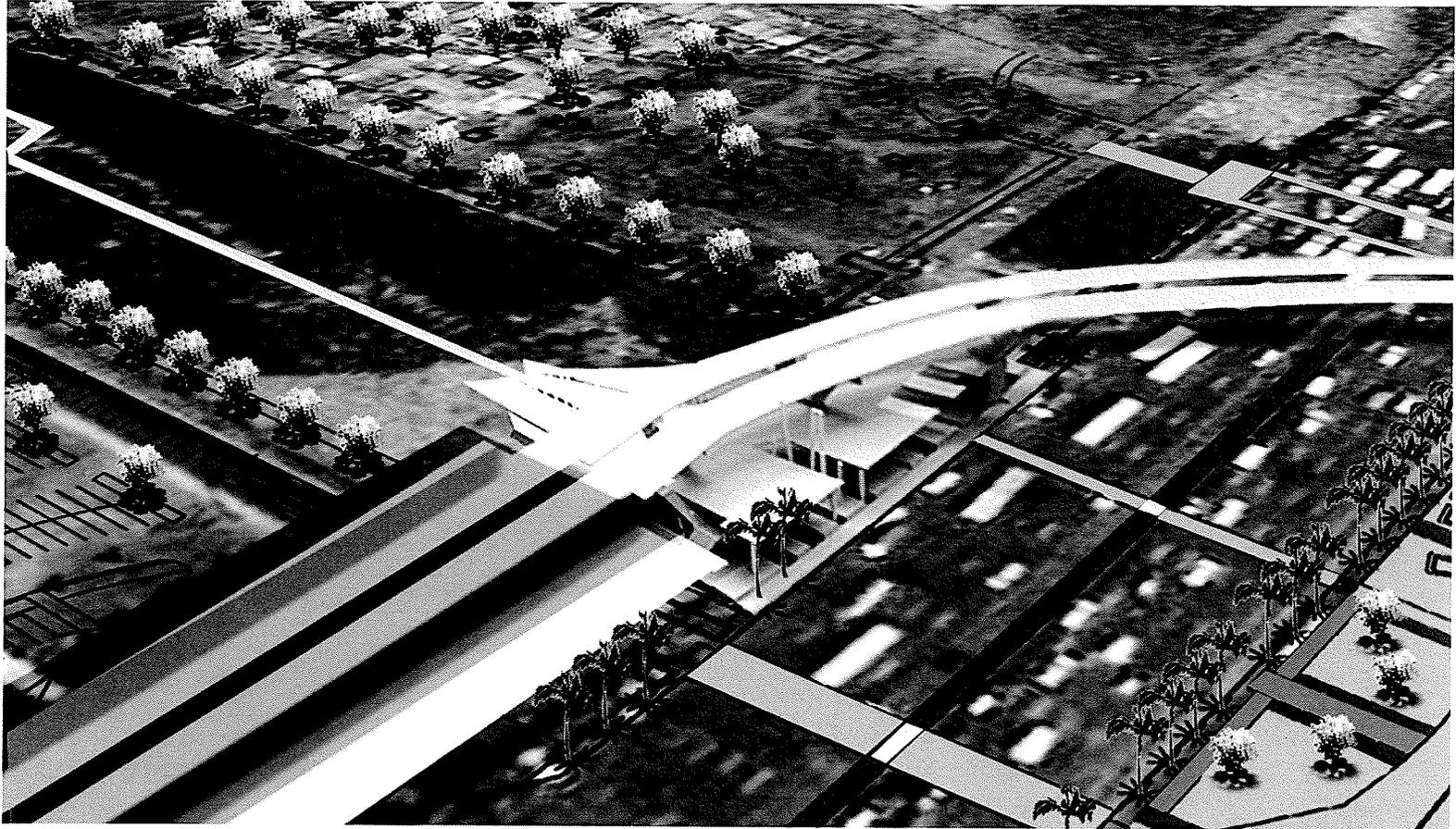
- The boardwalk is located along the edges of the canal and provides pedestrian passageways to/from Manila Bay and the city. It also promotes access to future development along the edges.
- A pier branches from the boardwalk (along the north side) and meanders until it connects to the Gateway. The pier functions to provide access to the Gateway and spaces to enjoy the view of water.
- Tall banana leaves and other vegetation are planted in containers to add greenery to the spaces on the pier.

### THE GATEWAY

*“Manila possesses the greatest resources for recreation and refreshment in its river and its ocean bay. Whatever portions of either have been given up to private use should be reclaimed where possible, and such portions that are still under public control should be developed and forever maintained for the use and enjoyment of the people.”*

*~ Daniel Burnham (Hines, 1974).*

Figure 33. The pier in the canal leads to the Gateway at Roxas Boulevard.



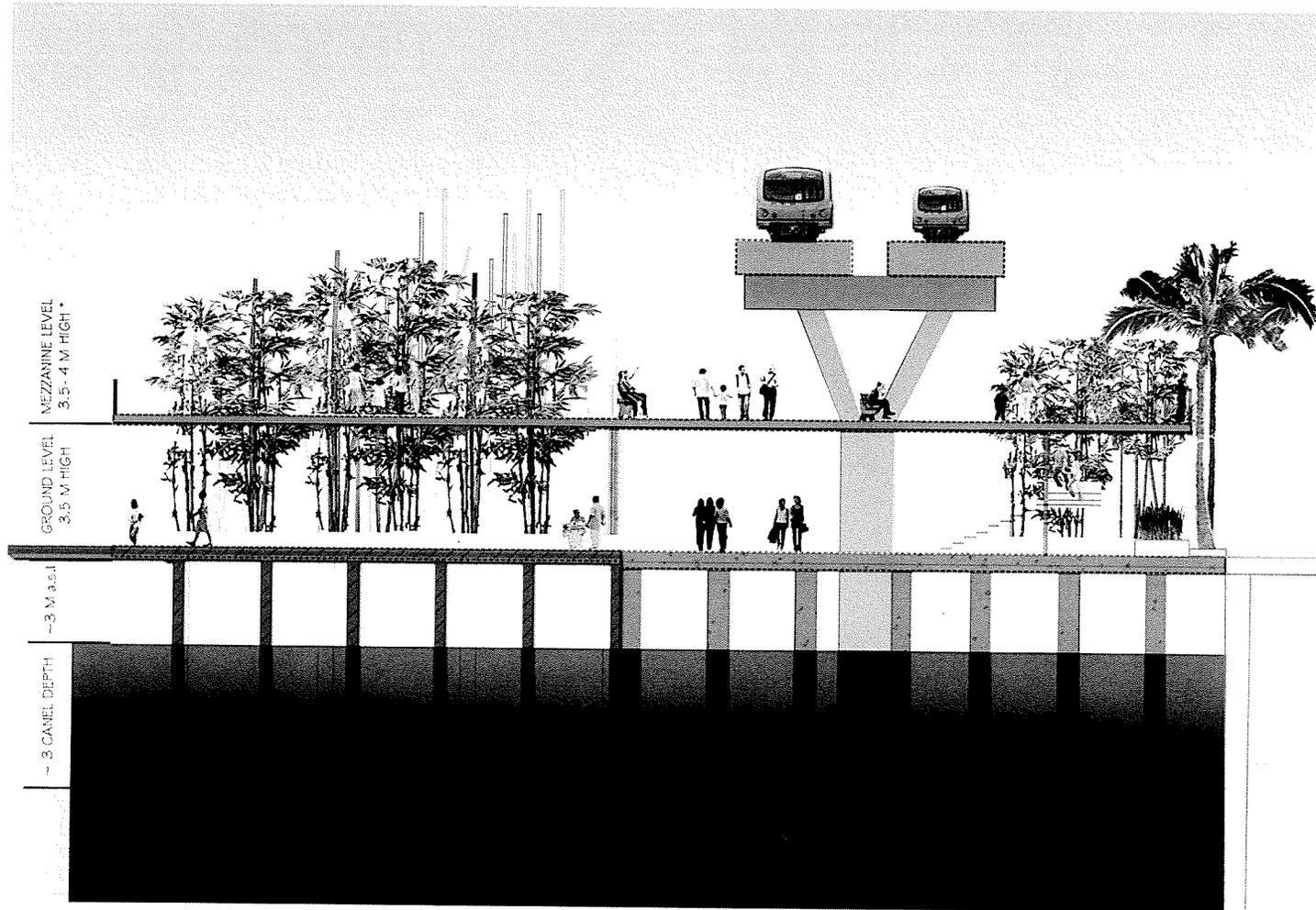
The Gateway is the entryway into the city and creates a sense of arrival into the city. It functions to bridge Manila Bay and the city; to unify the LRT, public spaces and transit facilities; and to provide visual relief and open space within the dense area. The Gateway is important to the neighborhood because like the rattan fence/net used to capture the fish in the past, it captures visitors and locals with its details such as views, bamboo and water. The design of the Gateway is influenced by the rattan fence, the momentum of the LRT, and the scale of the LRT station. It is divided into two levels: the ground level and mezzanine level.

### ***GROUND LEVEL***

Design interventions:

- This level is located three meters above the canal water. Supported by piers, the width of the canal defines the width of the Gateway.
- Access to this level is by the pier, the two crosswalks across Roxas, the Redemptorist Station and the main sidewalk located at the north end of the Gateway.
- Access points to the pedestrian crosswalks, (on both sides of Roxas) are clearly marked with light translucent glass. These are used to highlight pedestrian spaces for drivers in Roxas.

Figure 34. Proposed cross-section for the Gateway.



N GATEWAY SECTION

Figure 35. A view from the pier approaching the Gateway.



- The LRT columns frame the approaching view of the bamboo.
- **Main features** (Figure 36):
  - A water fountain filled with dried bamboo is the focal point of the Gateway. It commemorates the history between Baclaran market and the canal. The height of the bamboo is nine meters in order to give LRT passengers' a glimpse of it.
  - Concrete planters filled with living bamboo plants, surrounds the focal point. Living bamboo is used to represent the present and future relationship of the two places. The height of the bamboo complements the height of the LRT columns but can grow to higher heights in order to provide shade, and gives LRT passengers a impression of entering a bamboo forest.
  - Pedestrian pathways are located between the focal points and planters, and connect to the

Figure 36 . Detailed plan for the Ground level in the Gateway.

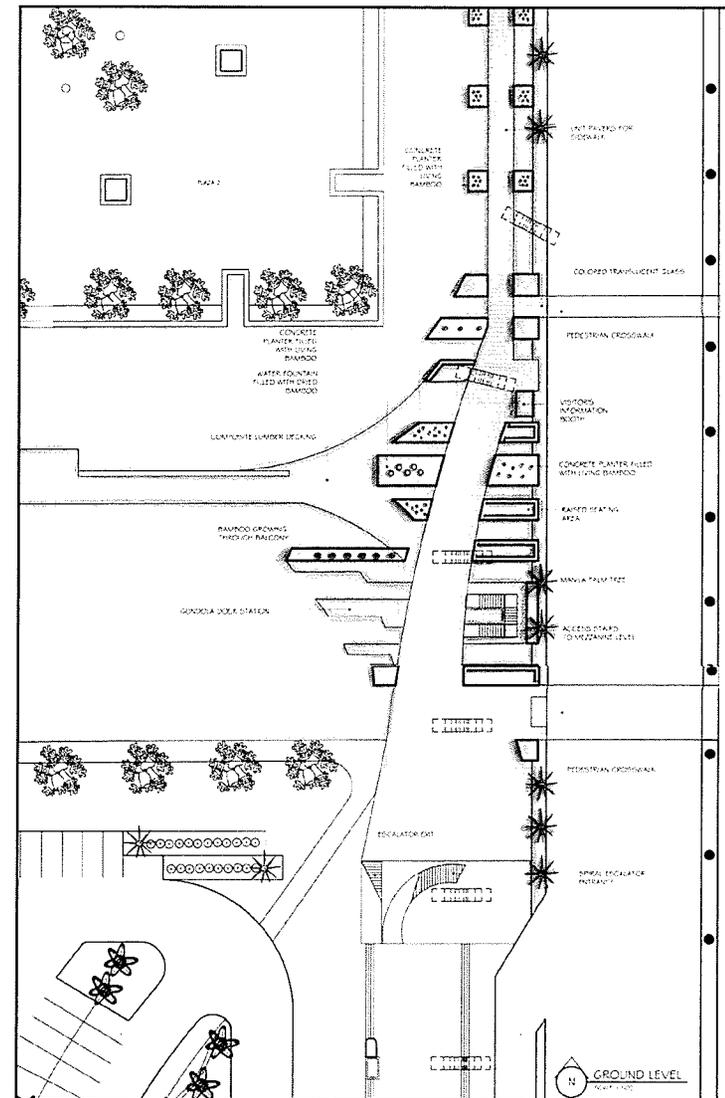
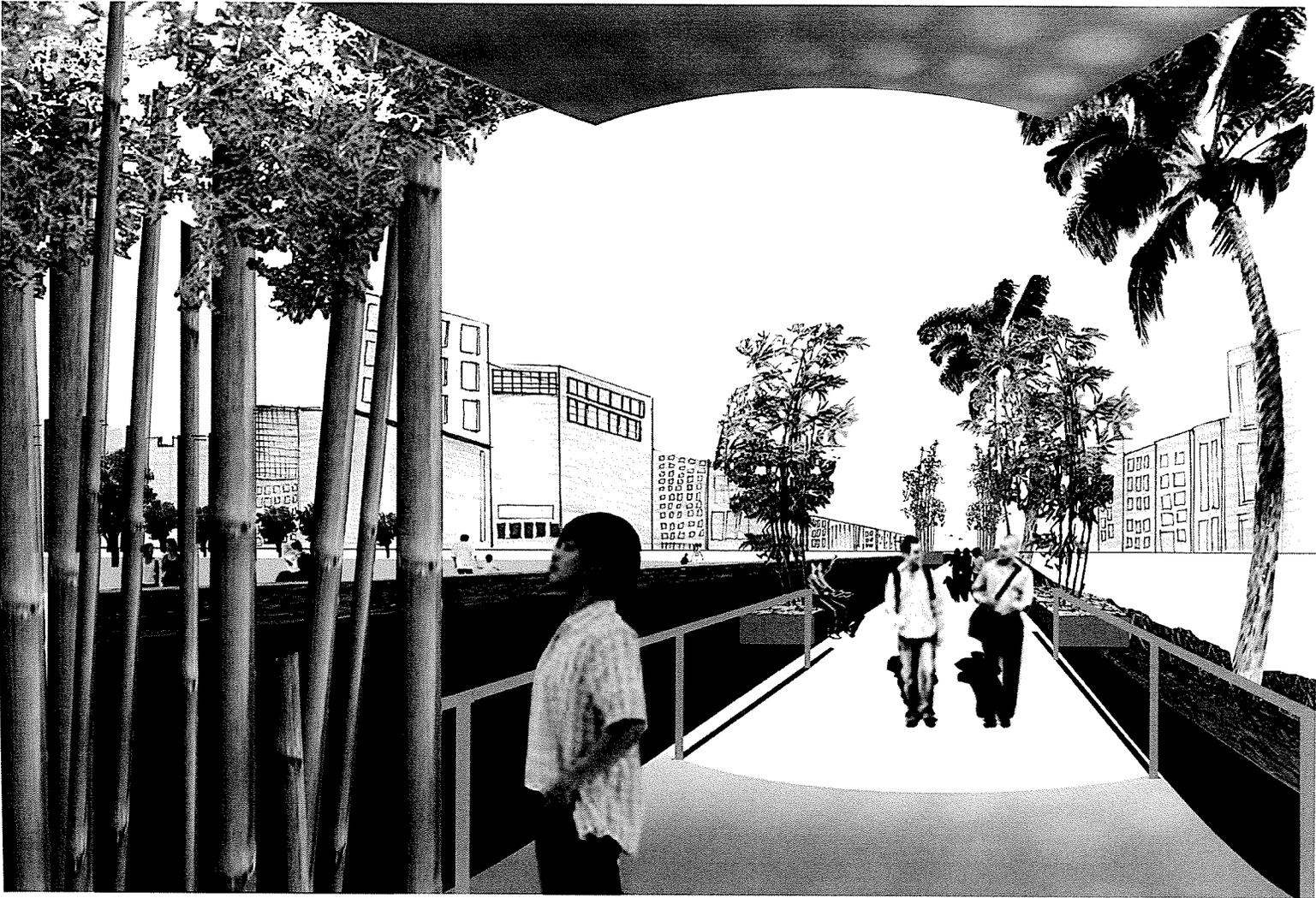


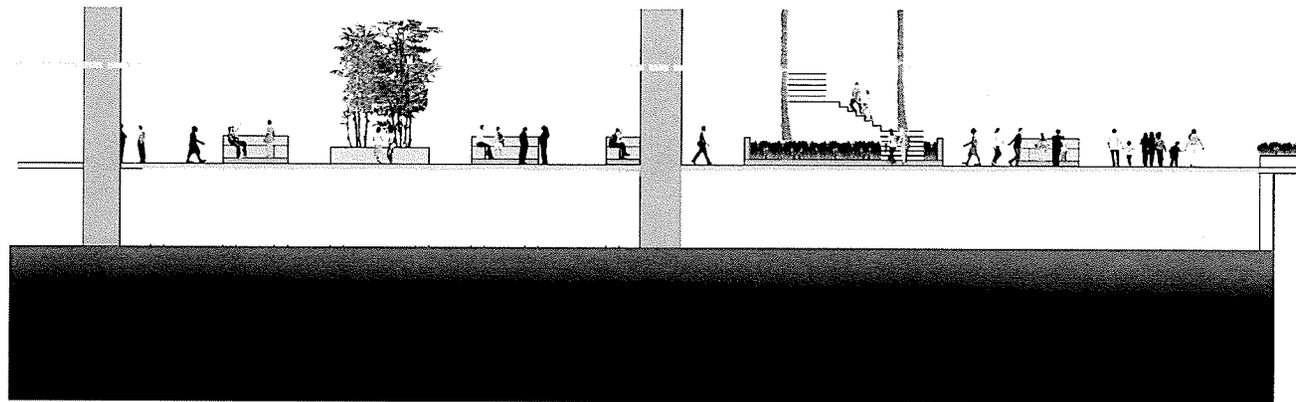
Figure 37. A view under the north end of Mezzanine level in the Gateway.



main sidewalk.

- The planters located at the gondola docking station, the north end of the Gateway, and the central area along Roxas contain bamboo that are permitted to grow through to the mezzanine level in order to show the unity between nature and architecture.
- The planters throughout the Gateway span along the sidewalk from the Gateway to Redemptorist Road to create a bamboo forest, and to strengthen the relationship between the canal and market.
- Views of the water are seen intermittently between the planters to change the materiality and depth of the ground plane.
- Pockets of raised spaces to sit and gather are located close to the sidewalk. These spaces take advantage of the

Figure 38. Proposed cross-section for the Ground level in the Gateway to show raised sitting spaces and views of the water.



GATEWAY SECTION

covered space and visual permeability across Roxas (Figure 38).

- A gondola docking station is located south in the Gateway to provide alternative ways to enjoy the water.

### ***MEZZANINE LEVEL***

- This level is located 3.5 meters above the ground level and is supported by the LRT columns.
- **Main features:**
  - This level connects to the ticket level of the station.
  - Access is available by stairs and a ramp. The ramp is located branching away from the pier and connects to the north end of the mezzanine. Both access points are highlighted with color translucent glass for easy wayfinding.
  - The planters on the pier continues onto this level adding green spaces above.
  - The floor material is frosted translucent glass.

Figure 39. Detailed plan of the Mezzanine level in the Gateway.

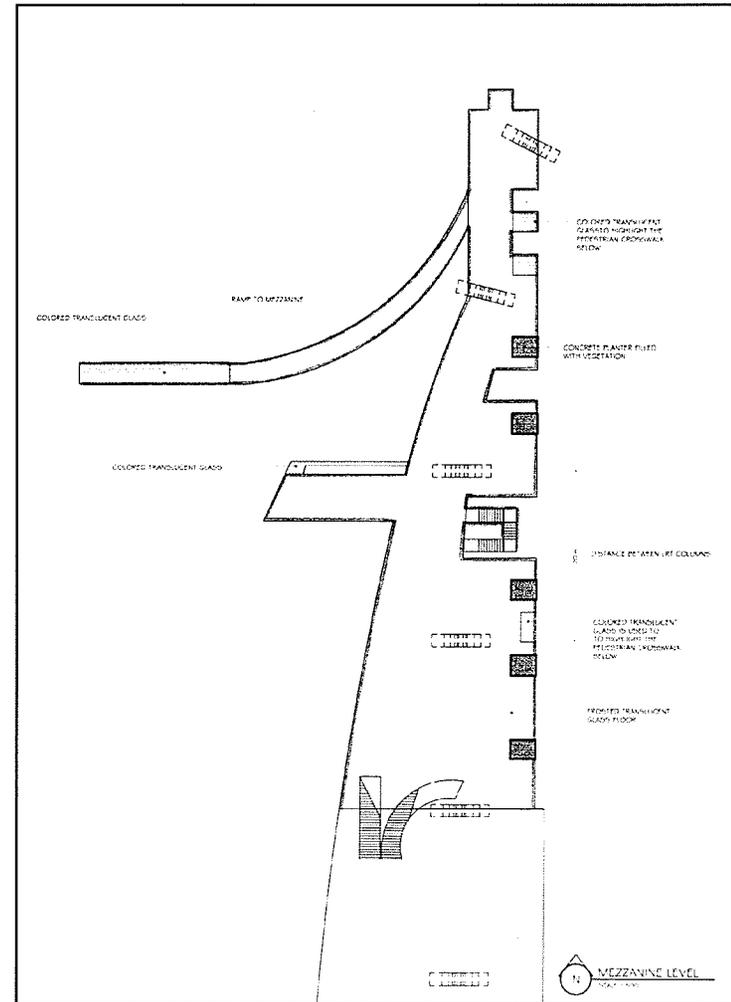
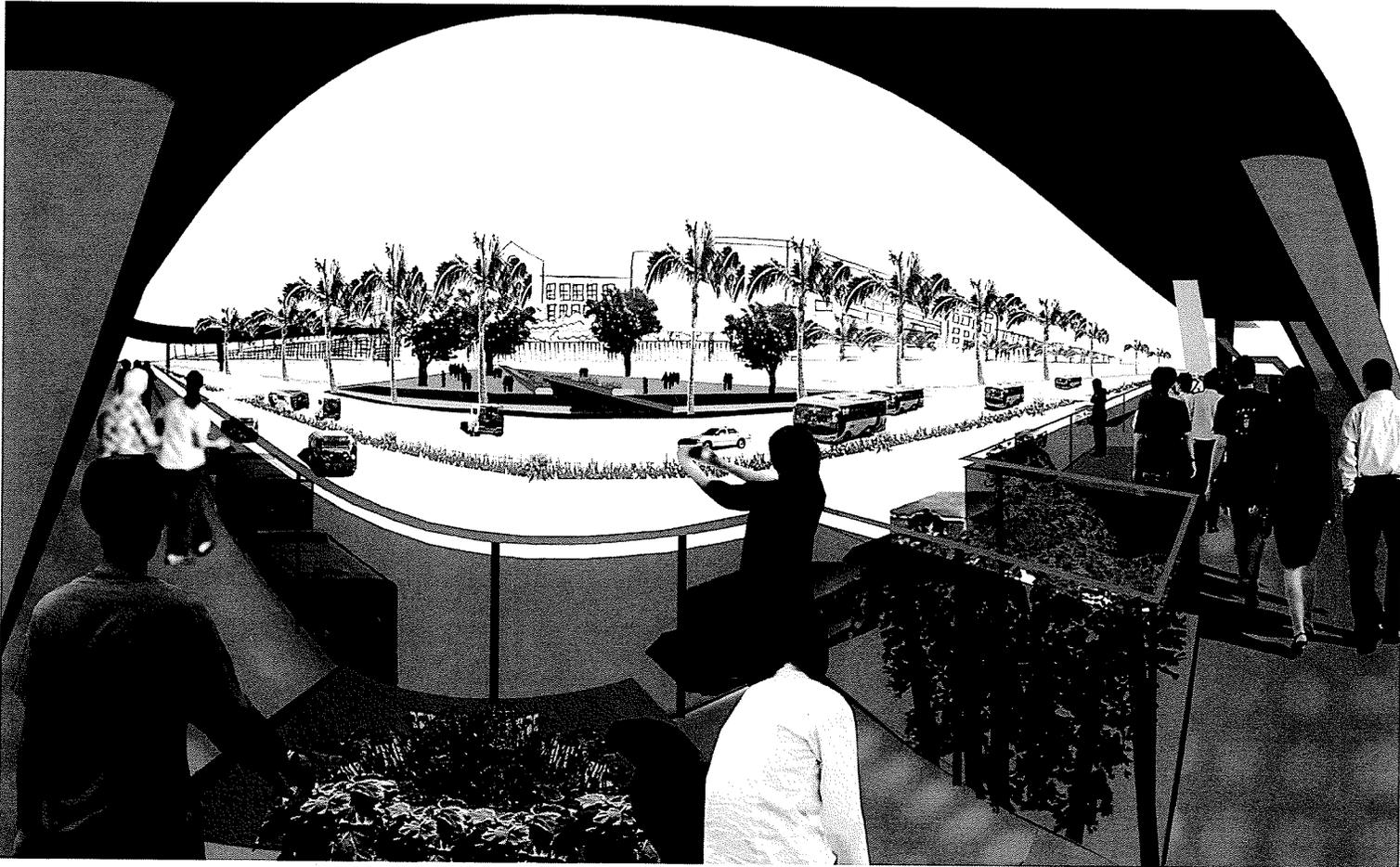


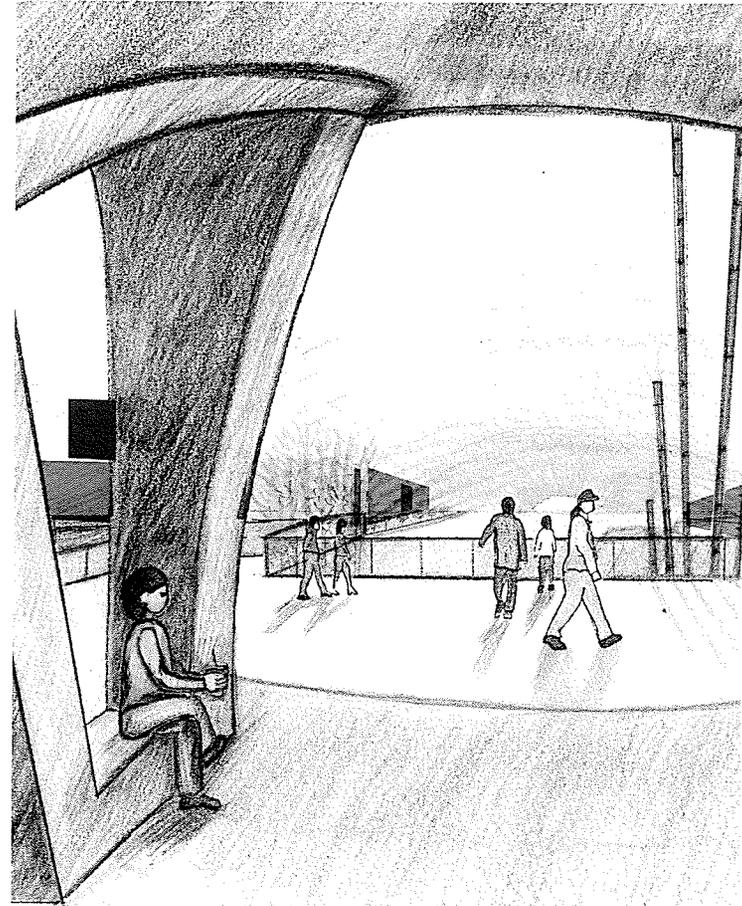
Figure 40 . A view of Roxas Boulevard from the Mezzanine level in the Gateway.



This provides light and privacy for each level.

- To highlight the importance of the pedestrian crosswalks, colored translucent glass covers the access points below.
- This level provides a platform for pedestrians to detach from the street and attach to the city; to provides open and fresh spaces; and to enjoy views of the sunrise and sunset.

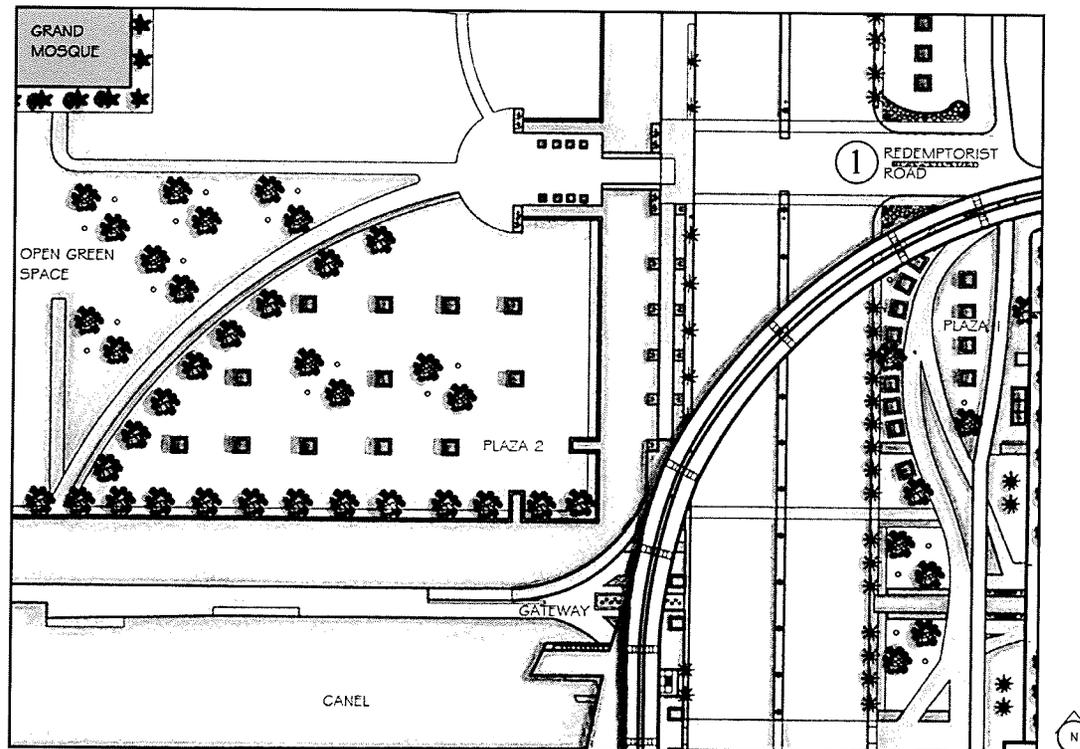
Figure 41 . A place to enjoy the sunrise and sunset.



## PLAZA

There are two plazas in the site: Plaza 1 is located along the east side of Roxas, and Plaza 2 is located on the reclaimed land adjacent to the Grand Mosque (Figure 42).

Figure 42. Plaza 1 and Plaza 2 along Roxas Boulevard.



### ***PLAZA 1***

- The plaza occupies the pedestrian realm in the boulevard. It functions as a continuation of Baclaran Market, an extension of Redemptorist Church, and a transitional space between the public spaces and transit facilities. It includes vendor spaces (*brown squares in plan*), pedestrian pathways, the jeepney access lane, and jeepney stop.
- Two pathways curve through the space providing links to Redemptorist market, the crosswalks, and the OBR terminal. The narrower pathway leads to the front entrance of the church.
- The access lane travels along the east side of the plaza and gives jeepney and private vehicle access to Redemptorist Road.
- Trees similar to those found at the church parking lot, are planted in the area in front of the church. These are used to bridge the two spaces together and create the same positive qualities for the space.
- Other features in this area of the plaza are water fountains used as an extension of the canal and the planters similar to those found in the mezzanine level.

### ***PLAZA 2***

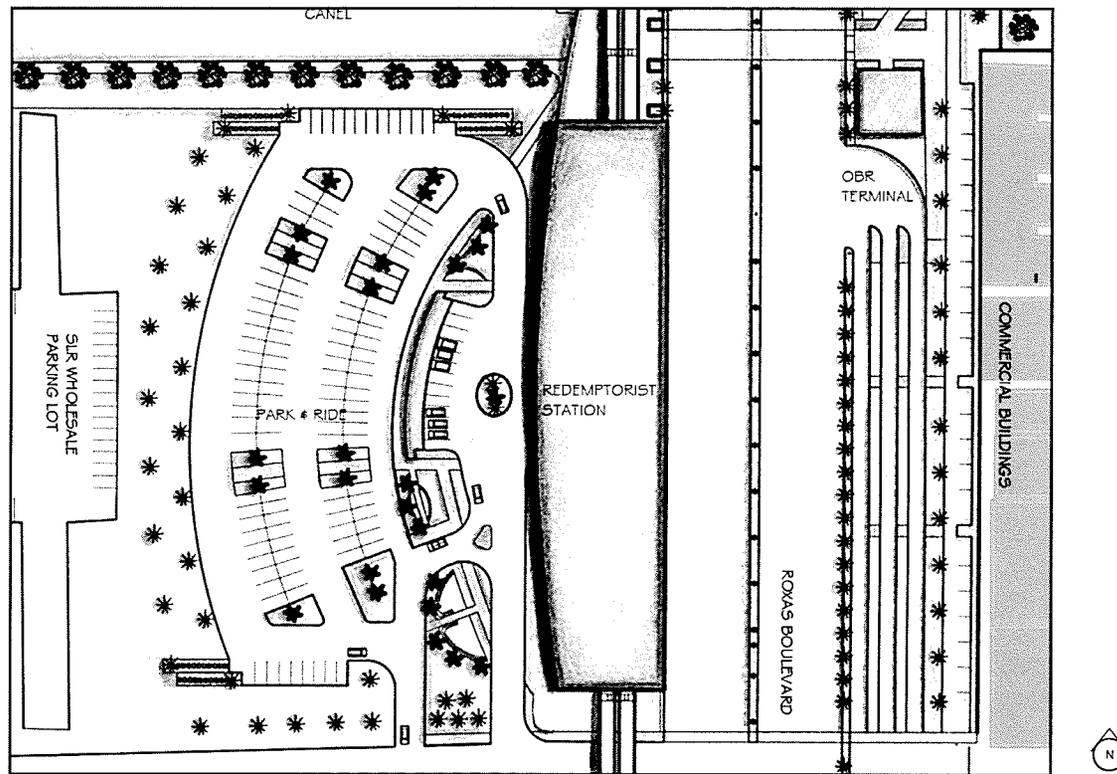
- Plaza 2 is located in the reclaimed land adjacent to the Grand Mosque and is accessible by the bridge located at the Redemptorist crosswalk. The space functions as an extension of Baclaran market and it includes vendors, cafes and trees similarly to Plaza 1. The trees planted in this space are used to bridge the two plazas together.
- Pathways replicate the potential lines of momentum from the LRT line.

- Along the curved pathway, a low wall is created to act as a boundary between the market space and gathering space (located on the northwest), and functions as a bench.
- A buffer zone surrounds the Grand Mosque to reduce noise levels.

### 4.2.3 TRANSIT FACILITIES

In the masterplan, the transit hub is defined by the Redemptorist station and OBR terminal. Crosswalks between the two facilities provide direct and clear connections to each other. The crosswalk located north is 7.5 meters wide and is equipped with crossing lights that are timed for longer crossing periods. These features allow more space and time to accommodate the

Figure 43. The transit hub in Roxas Boulevard.



high volumes of pedestrian traffic across the boulevard. As illustrated in the circulation plan (Figure 44), circulation patterns for each type of transit have changed in order to accommodate closer transfer points for commuters and reduce traffic congestion on Roxas.

## **OBR TERMINAL**

Design interventions:

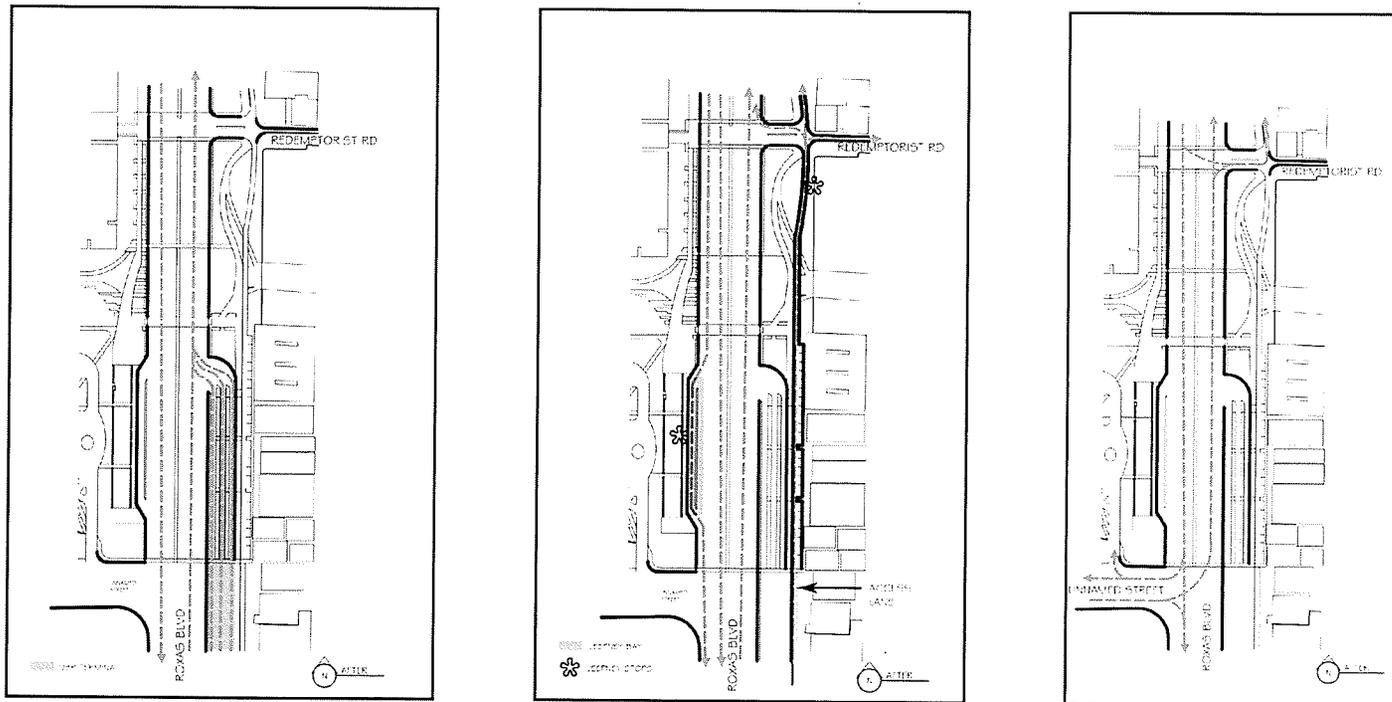
- The OBR terminal is relocated across Redemptorist station to reduce bottlenecks at the junction, provide space for the plaza, and provide direct access to other transit facilities in the site.
- The number of lanes in the bus bay is reduced from five to three in order to allocate more space for pedestrian amenities such as the OBR waiting area, wider sidewalks to walk, load and unload, light fixtures and bus information.
- Transit-priority lights are installed at the OBR terminal to provide easy transition into Roxas traffic.

## **TRANSIT SERVICES**

Design interventions:

- Jeepney stops are located under the Redemptorist Station. A double lane bay provides easy transitions in/out of Roxas traffic. The inner lane can accommodate approximately 10-13 jeepneys, and allows space for unloading and loading. The outer lane (nearest to Roxas traffic) is used as the by-pass lane (Figure 44- *middle*).

Figure 44. Proposed circulation plan for buses (left), jeepneys (middle) and taxis/ FXs/ MOA shuttles (right) along Roxas Boulevard.



- A dedicated access lane for jeepneys and private vehicles is located adjacent to the OBR terminal. This gives both types of transit clear demarcation of travelway within the pedestrian realm. A designated jeepney stop is located near the corner of Redemptorist Road.
- Traffic lights are installed at Roxas Boulevard, the unnamed street and at the OBR terminal.
- Taxi and FX areas are located on the west side of the station, within the Park & Ride facility (Figure 44-*right*).
- The MOA shuttle stop is located in the Park & Ride facility.

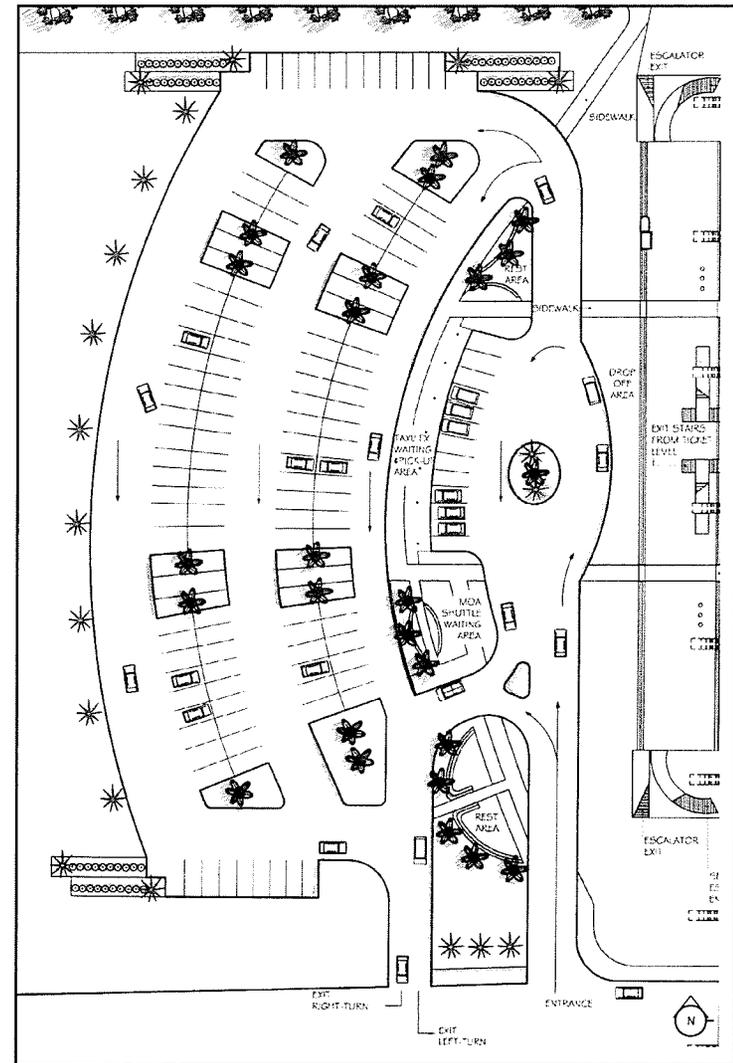
## **PUBLIC PARKING**

There are two public parking facilities located in the site:

- 1) The Park & Ride facility is located adjacent to Redemptorist station. This facility provides long-term parking for LRT passengers and short-term parking for visitors of businesses along Roxas, Redemptorist church, or the Gateway. Access is located at the unnamed street.
- 2) Long-term parking is located north adjacent to the Grand Mosque. This facility caters to visitors of Baclaran market, the Grand Mosque, Plaza 2 and other areas north of the site.

- Taxi and FX vehicles gain access to the Park & Ride by the entry point located on the unnamed street. A roundabout separates the drop-off area from the waiting area for both types of transit (Figure 45). Waiting areas are sheltered, well lit, and posted with route information.
- The MOA shuttle waiting area is located south of the taxi and FX waiting area, in the Park & Ride facility. Shuttles entering the facility, take the left lane then turns left at the yield (Figure 45). The shuttle waiting area is furnished with benches, light, and trees for shade.
- Both facilities are well lit and identified with clear entrance and exit signs.

Figure 45. Proposed circulation plan for the Park & Ride facility.



### **4.3 REDEMPTORIST ROAD**

#### **BACLARAN MARKET**

The design intervention for Baclaran market is to maintain the current activities of the street but organize them by using the rhythm of the columns. In general, the street is divided into different lanes to delineate proper spaces for vehicles, pedestrians, and vendors. It is equipped with transit amenities for the jeepney stops, and posted signs to locate the church's entrance and exit. The quality of spaces under the LRT carriageway is influenced by the changes in light and change in levels. This creates an ephemeral streetscape for the market.

Design interventions (Figure 46):

- Traffic lights are installed on Roxas, and at the intersection on Redemptorist Road, near the access lane. The lights at the intersection hangs from the LRT's carriageway to keep the sidewalk clear. All vehicles have access to the intersection (except for buses) but access to Redemptorist is limited to only private vehicles and jeepneys.
- A smaller version of the focal point in the Gateway is located at the west end of Redemptorist Road. This commemorates the relationship between the two places; it announces the entranceway to Baclaran market; and it divides opposing traffic at the intersection.
- Large curb extensions are located at the intersection to accommodate pedestrian crossing and sidewalk space.
- The street is well lit by the ceiling blocks on the carriageway and by hanging umbrellas. These hanging umbrellas are attached to the carriageway, and can be easily used by vendors who do not have their stalls.

Figure 46. Proposed masterplan plan for Redemptorist Road.

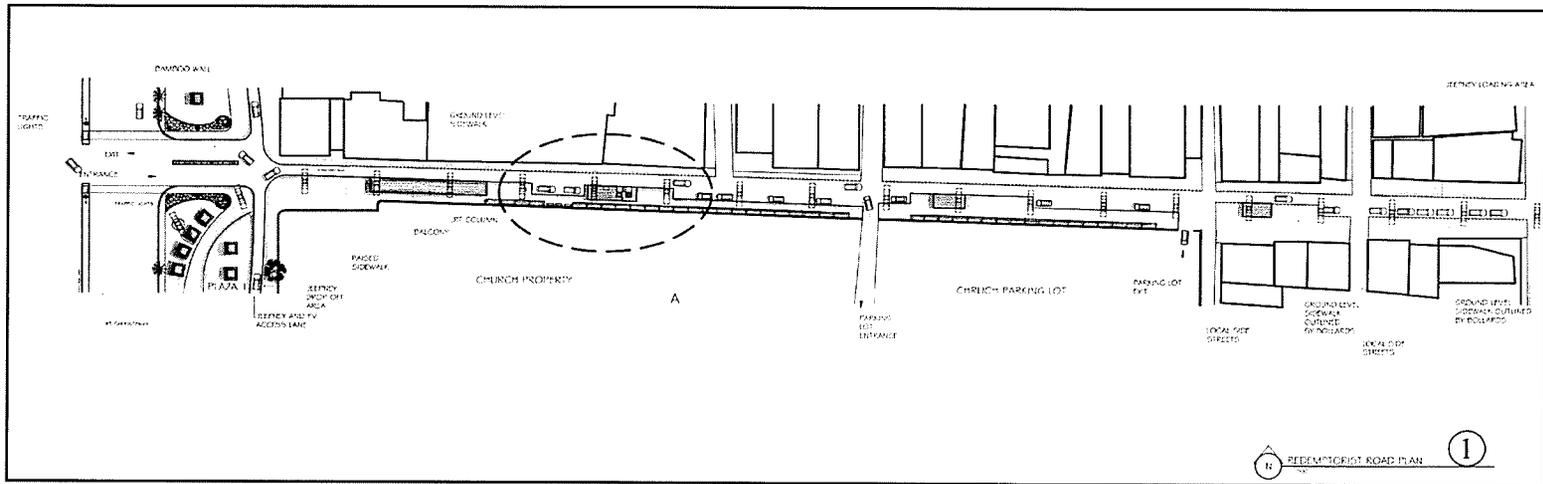
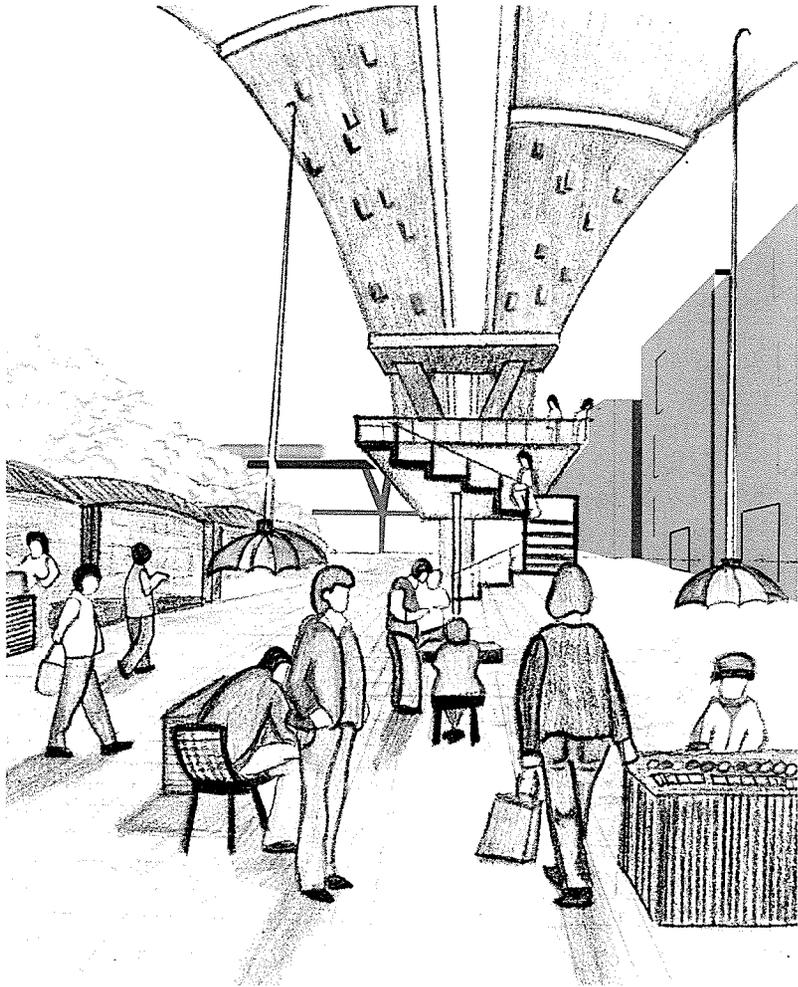
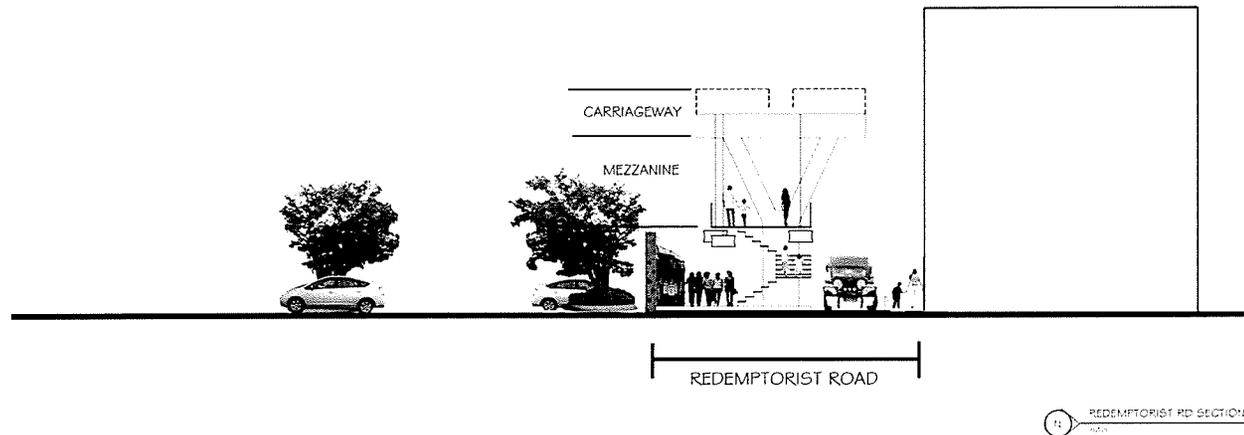


Figure 47. Features under the LRT carriageway in the market.



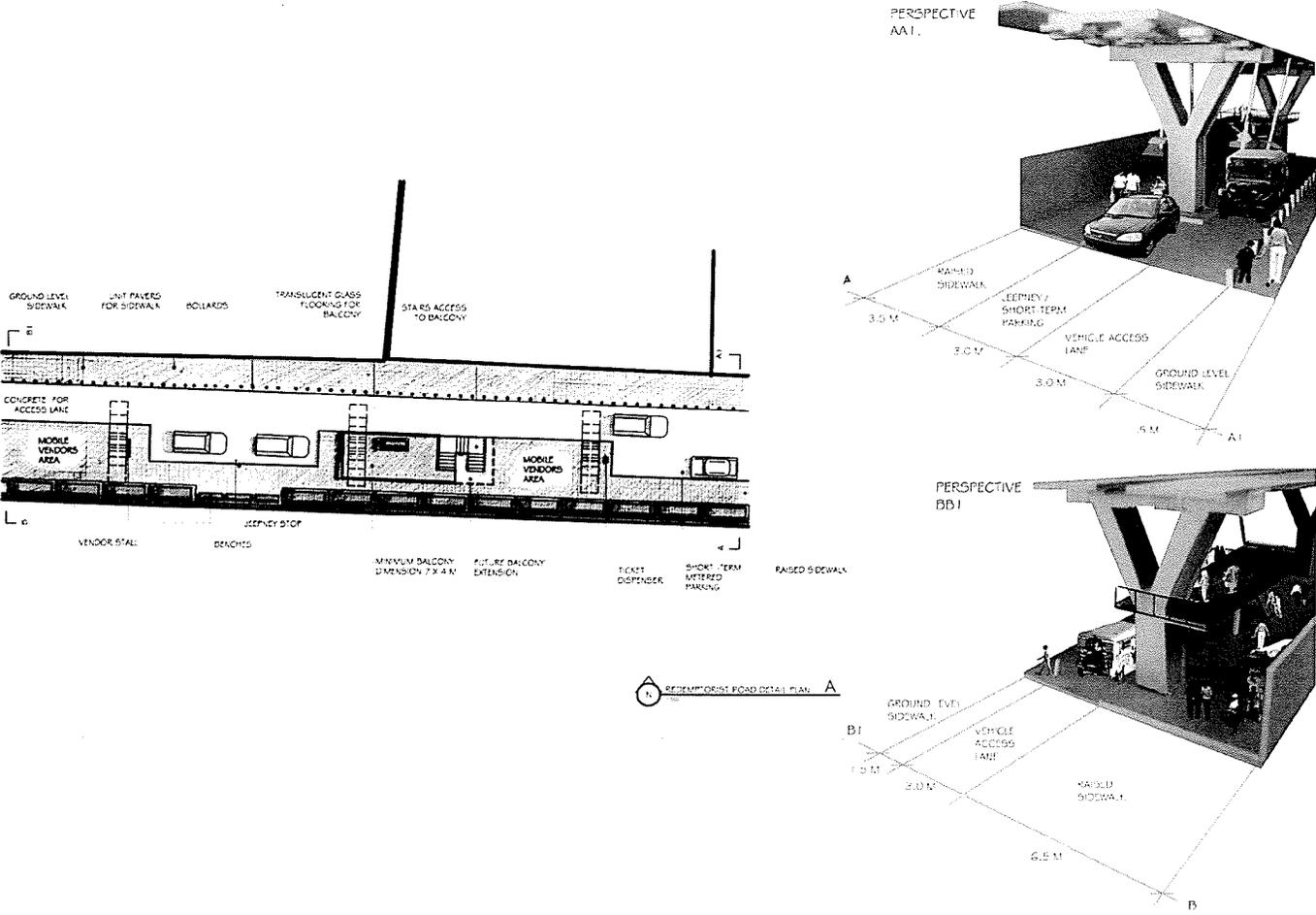
- The vertical spaces under the LRT are divided into two levels:
  - 1) **The ground level** is occupied by the typical activities of the street such as the market, walkways, and vehicle traffic.
  - 2) **The mezzanine level** has two functions: 1) to take advantage of the vertical gaps through changes in level, and 2) to create additional spaces for ground level activities , or provide new spaces and activities. This level is located 3.5 m above ground level and occupies an area of 28 square meters. If more space is required, the level can be extended up to 20 m, which is the distance between two columns. This level is supported by the LRT column and is accessible by stairs. The flooring material is frosted translucent glass.

Figure 48. Proposed cross-section for Redemptorist Road.



- The street is divided into four lanes (Figure 49):
  - **1) Raised sidewalk.** This lane is 3.5 m wide and located along the south edges of the street. It is shared space between pedestrians and vendors.
  - **2) Jeepney and Short-term parking spaces.** This lane is 3.0 m wide and is located adjacent to the raised sidewalk, between the columns. A jeepney stop is located near the west end of the street, and is defined by two columns. This stop allows passengers to load onto jeepneys and provides transit amenities such as signs, light, and benches. A jeepney terminal is located at the east end of the street and is defined by a series of columns. Emergency vehicles or stalled vehicles can use these spaces without disrupting traffic in the access lane.
  - **3) Access lane.** This lane is 3.0 m wide and is located adjacent to the jeepney and parking lane. This lane allows access to the street for jeepneys, private vehicles, and delivery vehicles. Brick pavement is used to slow down vehicle travel speeds.
  - **4) Ground level sidewalk.** This lane is 1.5 m wide and is located adjacent to the access lane. Bollards define the edge of the lane and separates pedestrians from vehicles.

Figure 49. Detailed plan for Redemptorist Road (left) and isometric view of the street (right).



## CONCLUSION

The Baclaran neighborhood has transformed from a vehicular oriented area to a pedestrian-oriented, transit-friendly place. Throughout the design process, this transformation slowly emerged by remaining focused on the development of the area by balancing the uses, needs and function of the place, and investigating the impacts of an elevated LRT structure in the neighborhood. This practicum proposes design interventions that establish a strong pedestrian realm in Roxas Boulevard; organize spaces in Redemptorist Road; utilize vertical gaps under the LRT carriageway; and connect public spaces and transit facilities together to help integrate an elevated LRT structure in Manila's urban streetscape. Furthermore, in recognition of pedestrian needs, activities, and uses on the street, this practicum establishes a framework related to boulevard design. In recognition of the LRT structure and facility, and mixed-modes of transit, this practicum fosters urban design principles related to transit-oriented development.

The design of the masterplan as pedestrian-oriented examines pedestrian circulation patterns by the location of access points, transfer points, and crosswalks across Roxas Boulevard. The location of these elements is critical to regulate the continuous flow of movement; to establish a hierarchy in the volume of traffic; and to connect similar spaces together. The recommended locations of these points and crosswalks in the masterplan hope to achieve all of this while providing safe and clear pathways. Moreover, the provision of universal accessible features such as the ramp, elevators, and escalators located in the Redemptorist Station, and the Gateway, provide barrier-free access points to help pedestrians circulate efficiently and easily in the spaces.

Baclaran possesses opportunities and qualities that give it a distinct character, and it creates a specific sense of place for visitors and locals. The streets are filled with shared spaces to create a condition of the street that improves the impression of the

neighborhood and of the LRT structure. Furthermore, the mixed-used fabric of the neighborhood creates a dynamic landscape aimed to promote urban growth and change in the urban core.

This practicum also acknowledges that the impact of the LRT in the urban streetscape is not only a local affair, but also a city one. The objectives and interventions presented here reflect local issues and opportunities, but they are useful in the larger context, and for future development of urban places along the edges of the city. By bridging local and urban areas together, this establishes a network that invites users to engage with the spaces, and to generate new impressions of the city. All of which ultimately brings hope to envision Metro Manila as a pedestrian-oriented, transit-friendly city.

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