

**STRUCTURING AND REVITALIZATION PLANNING
FOR AMPEL MOSQUE AREA,
SURABAYA-EAST JAVA-INDONESIA**

**Conservation and Management of Historic Buildings
Advance International Training Program 2009/10
Lund University - SIDA**

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ABSTRACT

1.1 BACKGROUND

Surabaya is one of the largest cities in Indonesia. The city is very old and has several historic areas that fall into the category of cultural conservation area. Ampel Religious Tourism Area is one of Walisongo heritage located at the Northern part of Surabaya. This tourism area is part of the 18 cultural reservations in Surabaya that fall into the category of cultural conservation area.

Ampel religious tourism area is rich with historical value and is made up of diverse ethnic backgrounds. The area also classified as the preserved area. This is because the area was built up by many historical evidence and also because the area is the most visited religious tourism destination in Surabaya.

The areas surrounding Ampel Mosque Surabaya are parts of the city site which suffer from environment degradation. Moreover, this religious area has yet to be supported by a proper public services such as public infrastructures, public utilities, identifier screen, street furniture, circulation and accessibility, and the settlement ordering. For example, out of repair public streets, ineligible pedestrians and water drains, lack of street lightings, stint of parking area, and unstructured utility system. All those issues mentioned above certainly affected the potency of the mosque to become a tourism area. The problem, of course, hinder the development of the area.

Structuring and Revitalization Planning is a series of effort to organize the area to be more well-ordered, to improve the function of the area by optimizing its potencies and its strategic values, and to carry back the area vitality. At the end, it is expected that the effort would assist the area to achieve more values which would be indicated by an increase of economic productivity, as well as social and culture values of the urban area.



Fig.1 Entrance Gate of Ampel Area at KH. Mas Mansyur Street



Fig.2 Ampel Mosque Building (Old Mosque)

1.2 POTENCIES

1. **Ampel Mosque and Sunan Ampel is well-known in South-East Asia as one of religious tourism destination.** They are also known as the 'Sunan Ampel Pilgrimage Tour'. There are numerous ancient Islamic and historical relics to conserve and to maintain.
2. **The area has a unique cultural community.** It was formed by multiethnic culture. So that history can be used as a marker of Surabaya city and reinforcing its unique character as a historic tourism area.
3. **The area is located near to Tanjung Perak Port and the Kalimas River.** So, using water transportation will ease the transportation for the visitors.
4. **The area is located near to Tanjung Perak Port and the Kalimas River.** So by using water transportation will be easier for tourists who want to visit.
5. **The area is located close to business districts.** For tourism area, trading activities and facilities are expected to provide a chain effect for the improvement of social conditions of the population and economy of local neighborhoods.
6. **The area is located at urban area with numerous old and historical buildings.** The villages has been established with the historical development of Surabaya city. It has been shown by many older buildings and homes with distinctive architecture which still stand strong. Thus expected to strengthen the character of the area as a historic area. The villages in the region has a very strong interaction with trade activities and public facilities around the mosque.
7. **The mosque is close to the 'Ampel Market'.** The market is the centre of shopping stalls which sell Islamic accessories and merchandises along the gateway. The existence of this market creates recreative activities and creates attraction and added value for Ampel religious tourism area.

1.3 ISSUES

1. The mosque is located in an area with congested population and packed building. Thus causing an uncomfortable atmosphere for worship and sightseeing.
2. The site of the mosque building is not extensive enough. Thus less able to accommodate the number of pilgrims who can reach 10.000-15.000 peoples/ day.
3. The informal retailers are not be well-organized.
4. The traffic and the accessibility toward the mosque is inadequate.
5. The infrastructures and support facilities are insufficient



*Fig.3
Existing condition around Kalimas
River*



*Fig.4
Jembatan Merah (Red Bridge)*



*Fig.5
Ampel Market*

2

INFORMATION OF THE OBJECT

2.1 DATA OF THE OBJECT

2.1.1 LOCATION

According to the Spatial and Area Planning of Surabaya City year of 2015, regional planning of Ampel area is at Tanjung Perak Development Unit at coordinates 7'9" - 7'21" Transversal of South and 112'36" - 112'57" Longitudinal of East.

The Study Area Boundaries are as follows:

- North Boundary: Danakarya Street
- East Boundary : Nyamplungan Street
- South Boundary : Sasak Street
- West Boundary : KH. Mas Mansur Street

Tabel 1

Size (Ha)	Area Height (m) above sea surface	The Average Temperature (°C)	Distance to the capital of province (Km)	Total Population	Density (/Ha)
45	1 - 2	34	6	17139	302

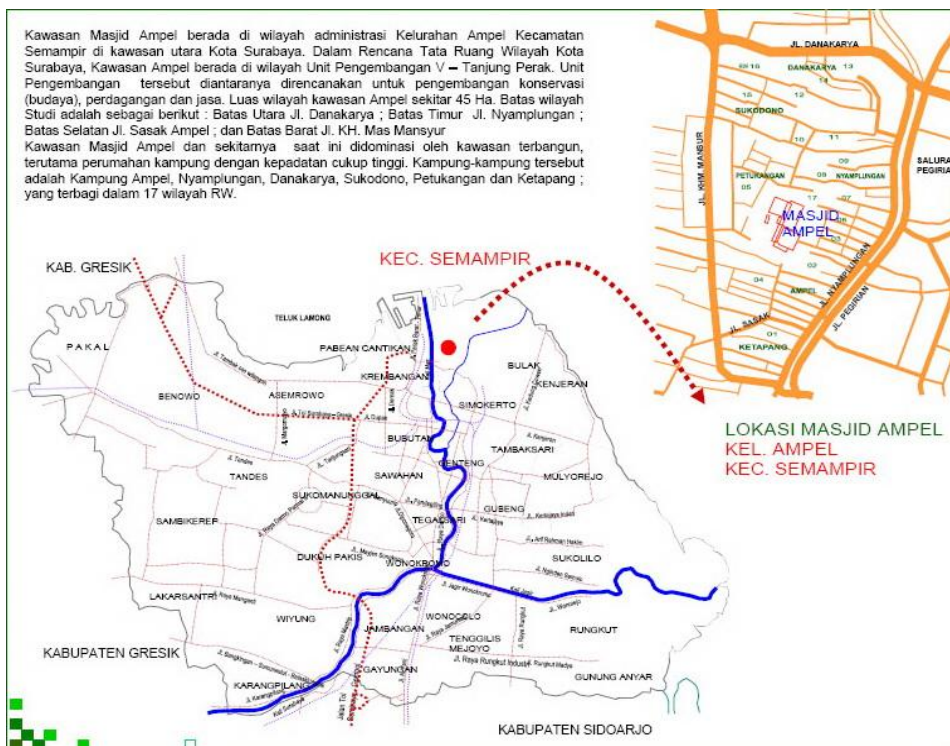


Fig.6 Site Plan

2.1.2 BUILDING

Discussion about the characteristics of the building in the study area include:

- a. **BUILDING COVERAGE RATIO (BCR)**
 - Housing : $\pm 70 - 100 \%$
 - Non Housing : $\pm 60 - 100 \%$
- b. **FLOOR AREA RATIO (FAR)**
 - 70 % area : 1 floor building (residence)
 - 30 % area : 2 - 5 floors building (non-residence)
- c. **BUILDING SET BACK (BSB)**
 - Housing : 0 - 5 M
 - Non Housing : 1 - 10 M
- d. **HEIGHT** : mostly ± 8 M and Maximal ± 25 M.

2.1.3 LAND-USE

.Composition of land use in the study area **dominated by housing**. While many other uses such as public facilities, trade and services, worship, health, public buildings, and green open space is very small percentage.

a. HOUSING

Housing conditions in the study area reflects the features of the **high density** of the city center. Located in **inner part** of the sheath region, ~~most type of housing~~ the housing is mostly typed as residential units, one-floor homes, with the ancient regional architecture style.

b. TRADE AND SERVICE

The land is used for commercial activities and city services within a local scale. It is located in the outer part of the sheath region. The commercial activities consist of hotels, shops, restaurants, Pegirian market, and other service activities which spread almost in all areas.

c. PUBLIC FACILITIES

Public facilities are mostly located at the KH. Mas Mansur Street and Danakarya Street which include office buildings, health centers, schools, places of worship, government offices and public buildings

d. GREEN OPEN SPACE

Green open space facilities in the study area include parks or green line and the graveyard which is not relatively large.

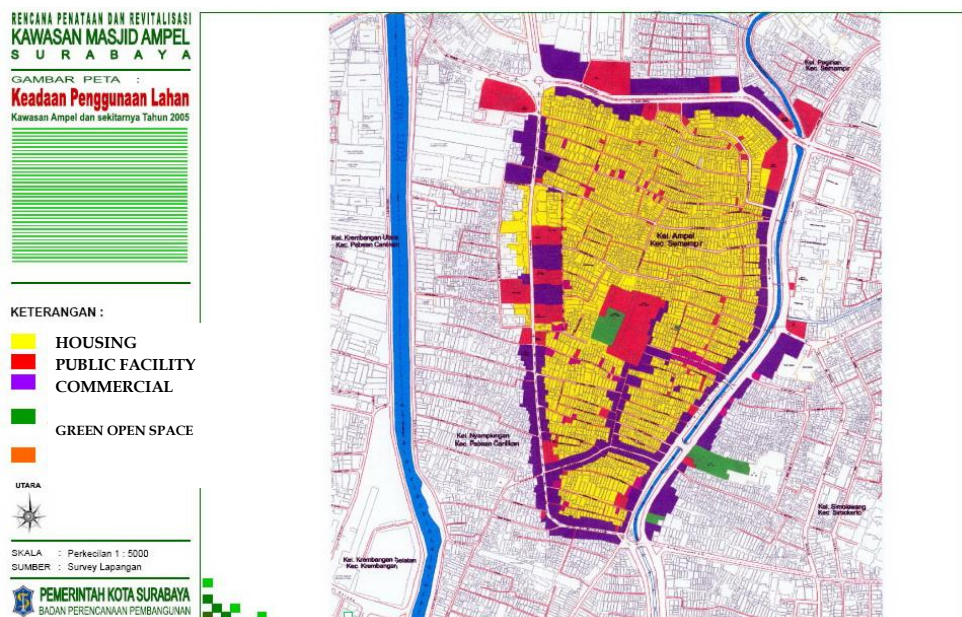


Fig.7 Land-Use Existing

2.1.4 STYLE

1. MOSQUE : Ancient Javanese Architectural Style

- The mosque is built with **three leveled roof**. Unlike mosque in the middle east and in the eastern Europe, Ampel mosque doesn't have any dome. The shape of the roof is prism (called as "Joglo"), which is a typical Javanese roof. The roof's top comes with a beautiful ornament made of bronze and brass. (Fig.8)
- The mosque is supported by **16 pillars** of teakwood, 17m in length and 60cm in diameter. On those pillars, there is calligraphy of Ayat Kursi (verses in Qur'an that explain The Power of God). Several Qur'an verses are leant on each pillar. The amazing factor about these wooden pillars is that they stand 'without any brace', causing a mystery question that has not been solved until today: how to transport those gigantic logs to Ampel when all transportation and construction means were not available at that time? (Fig. 9)
- Ampel Mosque has a **tower that functions not only as a land mark** (because of the soaring shape), but also used as a place to recite the Adzan, calling Muslims to worship God (sholat/prayer).
The tower that is 30 meters height is located near to the South entrance of the mosque. The tower has unique shape. It is made of hardwood tree decorated with carving and motives. There are many steps to pass to go upstairs. Unfortunately the tower is not open for the public anymore. (Fig.10)
- There are **big bedug** and **small bedug** on the South section of the mosque. Bedug is large drum suspended horizontally at mosque to summon to prayer. The small bedug is the artifact of Sunan Ampel. (Fig.11)
- In the west side of the mosque there are **graveyards** where Sunan Ampel and his best friends were buried. Sunan Ampel's tomb is always crowded by the pilgrims. It can hold up to 3000 pilgrims.
In the Eastern part of the mosque complex, there is Mbah Soleh's tomb. Nine gravestones are arranged in a row. Supposedly according to the story, Mbah Soleh had ever been alive and he died nine times. So there are nine graves of Mbah Soleh in the complex of the Ampel Mosque. The tombs are iron fenced around.(Fig.12)
- Close to the graveyard, there are **seven wells** from where the water can driven up to the inside of the mosque. This wells have been functioned that way since the first time they were found/built. It is believed that these wells will never get dry. It can be said that the water is Surabaya's zam zam (zamzam is water from Mecca's sacred well). (Fig.13)



Fig. 8



Fig.9



Fig.10



Fig.11



Fig.12



Fig.13

The seven wells are connected by tunnel and the water can be taken from twelve “gentongs” (large earthen-ware bowl for water) and dispenser on the west section of the mosque. Unfortunately, the wells cannot be seen publicly because they are covered by wood. It is intended to avoid polytheism. It is also believed that the water from the wells can heal various diseases. (Fig.13)

- In the Ampel quarter, there are **5 gates** along the way toward/from The Great Mosque of Sunan Ampel (as the symbol of 5 essential elements of Islam) (Fig.14). Those five gates are :

1. **Peneksen Gate, the gate to the tomb**

It symbolizes *Syahadat*, a testimony that “There's no god but Allah SWT, and Muhammad is the messenger (prophet) of God”.

2. **Madep Gate**, located on right across the **West** side of the mosque: It symbolizes *Sholat*, the daily prayer ritual which is performed five times a day, at sunrise, midday, mid-afternoon, sunset, and at night. The Sholat is performed by moslem bowing and then prostrating himself in the direction of Mecca, called *Kiblat*.

3. **Ngamal Gate**, located on the **Southwest** of the mosque :

It symbolizes *Zakat*, charity or alms-giving.

4. **Poso Gate**, located on the **South** side :

It symbolizes *Shoum/Fasting*. The daytime month-long fast of Ramadhan is a time of contemplation, worship and piety. Moslem people only permitted to eat during sunset until sunrise)

5. **Munggah Gate**, located on the **South** side (Jl. Sasak) :

It symbolizes *Haji*. Pilgrimage to the holy city of Meccain Saudi Arabia is required of all Moslems once in their life time if they can afford to make the journey and are physically able to.



Fig.14

2. HOUSING

Mostly, the types of the housing in Ampel area are the **village housing units**. Those units are old historical buildings which enriched with ancient regional architectural style that laid horisontally. (Fig.15)



Fig.15

3. AMPEL MARKET

Approaching the mosque, you will find **Ampel Market**. This market is a place where shopping stalls sell-merchandises along the gateway. Those shopping stalls sell Islamic accessories and small merchandises such as Arabic perfume, veil, tasbih (a string of 100 beads to recite laudation), Moslem clothes, and many more. But the market **does not** have specific style. (Fig.16)



Fig.16

2.2 HISTORY

Raden Achmad Rachmatullah-known as the Sunan Ampel, is the descendant of the Prophet Muhammad's grandson, Imam Muhammad ibn Ali Husein. Sunan Ampel was one member of the 9 guardians (Walisongo) in Indonesia, especially in Java. Born in Champa (Northern part of Cambodia) in 1401. In 1420 he arrived in the island of Java with the initial mission to improve people's moral which declined after the death of King Hayam Wuruk and Mahapatih Gajahmada of the Majapahit kingdom.

Because of his success in raising moral of Majapahit's nobles, the King of Majapahit named Sri Kertawijaya-king who ruled at that time- presented an area called Ampel Denta. Hundreds of families lived there to be educated and established settlements in Ampel Denta. Raden Achmad Rachmatullah also taught Islam to the people who previously were the Hindu- Majapahit.

In 1421 he established and developed a mosque (now called Ampel Mosque) and schools that teach about the Holy Qur'an to children and youth (called "boarding school"). The schools are intended to be the center of the famous Islamic education in Indonesia. His students came from all over the country, both from the aristocracy and ordinary people. From here, the term of "Sunan Ampel" became popular. The area ruled/managed by Sunan Ampel was is now known as "Ampel Religious Tourism Area".

Kelurahan Ampel currently inhabited by people of various ethnicities. The ethnicities include Java, Madura, Arabic and Chinese. Other tribes of Kalimantan and Sulawesi are also part of them. It is because Ampel Area is located only 3 Km away from Port of Tanjung Perak, Surabaya.

2.3 LEGAL PROTECTION

Local Regulation of Heritage No. 5, Year 2005 concerning Conservation of Buildings and / or Environmental Heritage, stated that : the preservation or conservation, is the whole process of building management and / or cultural environment in order to preserve the cultural meanings they contain well-maintained, with the goal to protect, maintain and use, by carrying out:

- 1). **Preservation** is the preservation of a place exactly like its original state without any change, including efforts to prevent destruction.
- 2). **Demolition** is the destruction or removal of a building that is damaged or dangerous.
- 3). **Restoration**, which is carrying out:
 - (a) **Restoration / rehabilitation** is to restore the place to its original state by eliminating the extras and put the original parts without the use of new materials.
 - (b) **Reconstruction** is to restore a place as closely as possible to its original state, using old materials and new materials.
 - (c) **Adaptation / Revitalization** is to change the place to be used for more appropriate functions, which does not require drastic changes, or which just need a minimal impact.

2.4 THE OWNERS

The ownership status of Ampel Mosque Complex legally is on behalf of and under the direct protection of **Municipal Government of Surabaya**.

2.5 THE USERS

Users of Ampel Mosque Complex is anyone who made a pilgrimage to the area, consisting of Ampel area residents, residents of Surabaya City, as well as pilgrims from outside Surabaya. No exception for merchants who want to sell in the area.

3

ANALYSIS

Analysis was performed to several state and regional elements. The elements analyzed were those that have relevance with the development of the religious tourism area.

Based on this analysis, the formulation of plans can be formulated more applicatively. Several formulations are made to facilitate the plan in the to design or the design guidance for several environmental elements that must be developed or presented in Ampel area.

3.1 ANALYSIS OF BASIC PHYSICAL AREA

Development and growth of a region is generally affected by the carrying capacity of land used, considering the growing population and its activities will also develop the needs for lands. The basic physical analysis of Ampel Area are as follows:

- **TOPOGRAPHY** Condition
The slope of the land is not flashy, which is between 0-2%. Thus to develop in all directions will be relatively easy.
- **HYDROLOGIC** Condition
Ampel Area crossed by water drain which flowing toward the west side (Kalimas River) and to the east (Nyamplungan Street). We need to give the green line in this area so that no building will be built.
- **GEOGRAPHIC** Condition
Geographically Ampel is very profitable since the main road is through town, namely Nyamplungan Street and Danakarya Street. With such geographical position, it can be estimated that rate of growth and development in the area will be faster.

3.2 ANALYSIS OF AREA LAND-USE

Details of land use pattern in the Ampel Area are as follows :

- a) **Land-use for HOUSING**
The development of physical area for housing **will be based on the physical condition of land and economic social abilities of the citizens**. These characteristics could be **building scale or land scale, building physical typology, and the pattern of environment arrangement**.
- b) **Land-use for PUBLIC FACILITY**
Land for public facilities **directed at areas that have been utilized for the facility and the area on the main road**.
- c) **Land-use for TRADE ACTIVITY**
Land for the trade is **placed on a centralized area** to provide the flexibility of various facilities.
- d) **Land-use for GREEN OPEN SPACE**
Land for green open spaces planned significantly **to minimize the possibility of land use for other purposes**. The land can be used for: environment parks, gardens or green lines in the middle and the edge of the road, the green line along the edge of the water drain, sports fields, and the graveyard.

3.3 ANALYSIS OF BUILDING SETTLEMENT

In general, Ampel area is divided into **2 main parts** that differ in characteristics:

1. VILLAGE Region

The area located in the **inner part of the sheath region**, form a dense settlement buildings, which has various condition and character. This village has a long standing history as well as the city of Surabaya. So there are so many buildings and old houses with unique architecture and ~~is~~ are still standing strong, but unfortunately with lack of maintainance. The location is ~~in~~ around Nyamplungan, Petukangan, Danakarya, and Sukodono. (Fig.17, 18, 19)



Fig.17, 18, 19

2. COMMERCIAL Region

The area located **in the outer part of sheath region** dominated by commercial activities functions such as offices, commercials, hospitals, and services.-Most of them are new and modern. The location is at the main street, i.e. Nyamplungan Street, Danakarya Street, KH. Mas Mansur Street, and Sasak Street. (Fig.20 & 21)



Fig.20



Fig.21



Fig.22

3.4 ANALYSIS OF ENVIRONMENT SETTLEMENT

Ampel Area generally **does not have identity and distinctive character** that can be represented as a religious tourism destination unless Ampel Mosque and some old buildings. Some signage are architecturally designed to complement landscaping element and street furniture, but has not been able to become a landmark that truly represent the character of the area. (Fig.22)

3.5 ANALYSIS OF AREA CONDITION AND INFRASTRUCTURE DEVELOPMENT

The facilities and the infrastructures in the Ampel area are important for the development of many activities in the region. That includes worshipping activities, social economy, and tourism activities The facilities and infrastructure that require attention are as follows :

1. Motor vehicle parking facilities
2. Crosswalk facilities
3. Sidewalks and pedestrian
4. Tour information facilities
5. Premises facilities for small traders
6. Circulation System
7. Support facilities for Islamic activity
8. Green Open Space

3.6 VALUE ANALYSIS

3.6.1 DOCUMENT VALUE (Quantitative Scale)

a) HISTORICAL VALUE

Ampel Religious Tourism Area has historical value in relation to :

- **Age** : Ampel Area which the mosque as the main icon has existed since the 15th century.
- **Location** : Located in the Ampel Village or Ngampeldenta, where the presence of Sunan Ampel in Ampel was under the will and permission of the King of Majapahit. So that the location is indeed **an old historic area existed since the Majapahit era.**

- **Past Event** : The beginning of the existence of Ampel Area is because the success of the Sunan Ampel in the moral education of the nobles and the people of Majapahit who suffered chaos after the death of King Hayam Wuruk. So the King of Sri Kertawijaya who ruled at that time presented an area called Ampel denta.

b) BUILDING TECHNIQUE VALUE

1. ORNAMENT

Exterior and interior ornamentation of the mosques in general use sculptural techniques

- **Exterior** : mainly seen in the carved ornament on the 5 main gates which describes the typical style of Majapahit (Hindu architecture). (Fig.23)
- **Interior** : mainly seen in the wooden columns of the mosque, which has carved calligraphy verses of the Qur'an. (Fig.24)

Calligraphy (from Greek *κάλλος kallos* "beauty" + *γραφῆ graphē* "writing") is a type of visual art. It is often called the art of writing (Mediavilla 1996: 17).

Islamic or Arabic calligraphy (*calligraphy* in Arabic is *Khatt ul-Yad* خط اليد) is an aspect of Arabic art that has evolved alongside the religion of Islam and the Arabic language.

Arabic calligraphy is associated with geometric Islamic art (arabesque) on the walls and ceilings of mosques as well as on the page. Contemporary artists in the Islamic world draw on the heritage of calligraphy to use calligraphic inscriptions or abstractions.

Instead of recalling something related to the spoken word, calligraphy for Muslims is a visible expression of the highest art of all, the art of the spiritual world. Calligraphy has arguably become the most venerated form of Islamic art because it provides a link between the languages of the Muslims with the religion of Islam. The holy book of Islam, al-Qur'an, has played an important role in the development and evolution of the Arabic language, and by extension, calligraphy in the Arabic alphabet. Proverbs and passages from the Qur'an are still sources for Islamic calligraphy



Fig.23 The carved ornament on the 5 main gates which describes the typical style of Majapahit (Hindu architecture).



Fig.24 The wooden columns of the mosque, which has carved calligraphy verses of the Qur'an.

2. CONSTRUCTION

The construction of the original mosque made of wood that still use the hole-connected technology and without nails. The process of refining the surface of the pillars which made of wood did not use the crab but just using some kind of a machete or hatchet. (Fig.25)

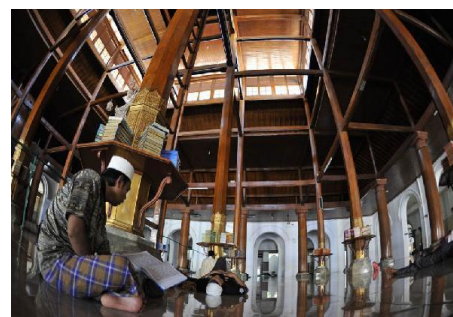


Fig. 25

c) **ARCHITECTURE HISTORICAL VALUE**

The main building, Ampel Mosque, is a **milestone** for other buildings, especially for the additional mosque -has built in 1993 and was finished 10 years later- which directly connect to the old one. The architecture of Ampel Mosque is artistic. It presents ancient Java and Arabic architecture nuance. The architecture presents itself as a synthesis of various attractive local elements. Eventhough the new buildings are modern, the effort to maintain its originality in design and in character can be seen in the pillars and the ornaments. (Fig.26, 27, 28, 29, 30, 31, 32)

The Old Mosque



Fig.26



Fig.27



Fig.28

The Extension Mosque



Fig.30



Fig.31



Fig.32

Design of The Extension Mosque is still adapting to the old mosque design. It's just made in more monumental scale and the use of concrete is more dominant than the wood.

d) **SOCIETY HISTORICAL VALUE**

Entering Ampel Mosque as entered in the multi-dimensional area. The touch of its religious values are strong, like a disturbing sense of historical curiosity. As one of Indonesia's oldest mosque, Ampel Mosque considered close to the history and myth. Especially when associated with spiritual experiences of Sunan Ampel which rich in miracles. Furthermore, the mosque is **not only utilized as a place for prayers, it is also used to hold recitation of the Al-Qur'an and education center (pesantren)**. It causes the area known as Ampel Religious Area. In addition, the number of traders who sell goods Islamic nuanced also causes the area known as Ampel Trade Area.

e) **PERSONAL VALUE**

The area was **closely related to Sunan Ampel** as the Islamic missionary in the area and as the founder of the region

3.6.2 EXPERIENCE VALUE (Qualitative Scale)

a) **IDENTITY**

- **Mosque**

Like in other countries, mosques building in Java, is functioned as a place of worship and to teach knowledge about Islam. Although specific type of mosque buildings in Southeast Asia is different from other mosques in other country, **the lay-out plan of mosque in Java is more like a temple plan** that older than the mosque building (which has already existed after the arrival of Islam in Indonesia).

Temples in Java, which the most plan are square, are a little different with the form of temples in other countries. This influence also seen in Java's mosque building. It is shaped from/like composite Tajug (usually composite odd) and has a square plan. The changes or variations in the appearance of the building will not change the square plan. (Fig. 33)

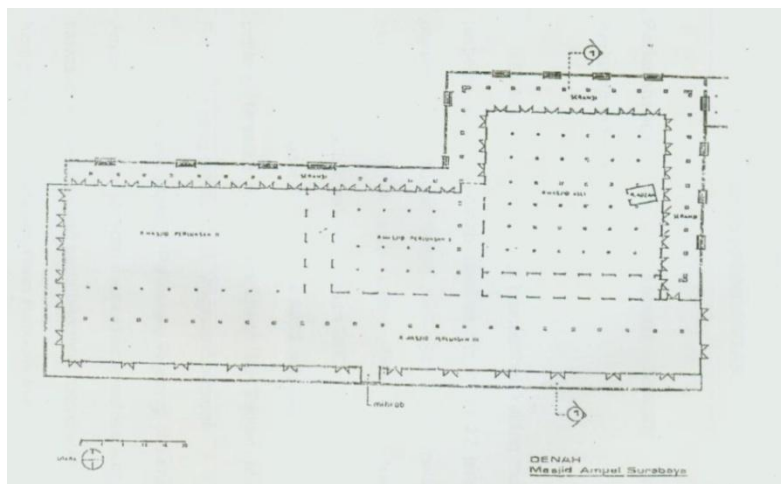


Fig.33

- **Village**

Some villages **still retain his trademark name** since it was first made at the time of Sunan Ampel, such as the Ampel Suci Village, Ampel Lonceng Village, Masjid Ampel Village, etc. So that should be appointed as one of the city attractions. (Fig. 34)



Fig.34

b) CONTINUITY

Ampel Area has continuity in its functions since founded in the 15th century until now, namely as the Islamic Religious Area in which has a variety of worship and trade activities, characterized by Islam.

e) SYMBOLIC

The existence of Ampel Area with The Ampel Mosque as its center, becomes a landmark for the city of Surabaya, especially the Northern part of Surabaya, **as a religious area** as well as tourist areas.

3.6.3 REINFORCING EXISTING OR ADDING COMPLEMENTARY VALUES**a) AUTHENTICITY****➤ Mosque**

Since founded in 1420, Ampel Mosque has undergone **expansion of 5 times**, i.e:

1. Original Mosque : built in 1420 → ± 441 M²
2. Expansion I : in 1926 → ± 458 M²
3. Expansion II : in 1954 → ± 256 M²
4. Expansion III : in 1972 → ± 480 M²
5. Expansion IV : in 1993 → ± 847 M²
6. Expansion V : in 1996 → ± 750 M²

So the total current size of the building is **3232 M²**

It also has the **addition** or **replacement** of old parts with new ones eventhough in general still maintain or follow the old forms.

1. Unlike most mosque buildings at the time that always use the "**soko guru**" who usually numbered 4, 6, and even 1 called "single pillar" mosque, Ampel mosque now has many pillars. The original "mihrab" (a niche used to mark such direction) is no longer there. Alleged to have transferred at the first expansion period. So "mihrab" that now exist is the new one.
2. **Outer walls** of the original mosque was now gone. So the well that once existed outside the mosque, is now inside the mosque. Also, the Minaret, is now inside the mosque.
3. **The roof** of the mosque which shaped Limasan (prism), originally covered by a kind of shingle lid (sirap). But now replaced by concrete roof tile.
4. **The development of the lay-out plan** was not involving clear concept of architecture, but rather adjusting to the remaining area.

So in this case, The Ampel Mosque building is **lack** of Authenticity Value.

b) PEDAGOGICAL

If we take a closer look at the Ampel Area, especially in the mosque, its physical form will **'talk' about the old methods** used in the construction and the ornaments. So that can **provide information about the age of the building**.

4

GOALS

The goals of the Structuring and Revitalization Planning for Ampel Mosque Area are :

1. **To evaluate the suitability of land in the utilization of space in Ampel Mosque Area.**
2. **To overcome the problem of space utilization in Ampel Mosque Area**, so the potential resources can be optimally utilized in accordance with the capacity and environmental carrying capacity, and in accordance with the policies of national and regional development.
3. **To explore and revive the economic and social potency** of Ampel Mosque Area to be utilized for the development of the city.
4. **To organize spatial development and the utilization of Ampel Mosque Area for community activities** by implementing sustainable development system and by increasing community empowerment and optimizing the participation of the private sector as development partners.
5. **Giving consideration / advice in decision** making as the basis for determining management policy in Ampel Mosque Area.

5

PRESENT SITUATION

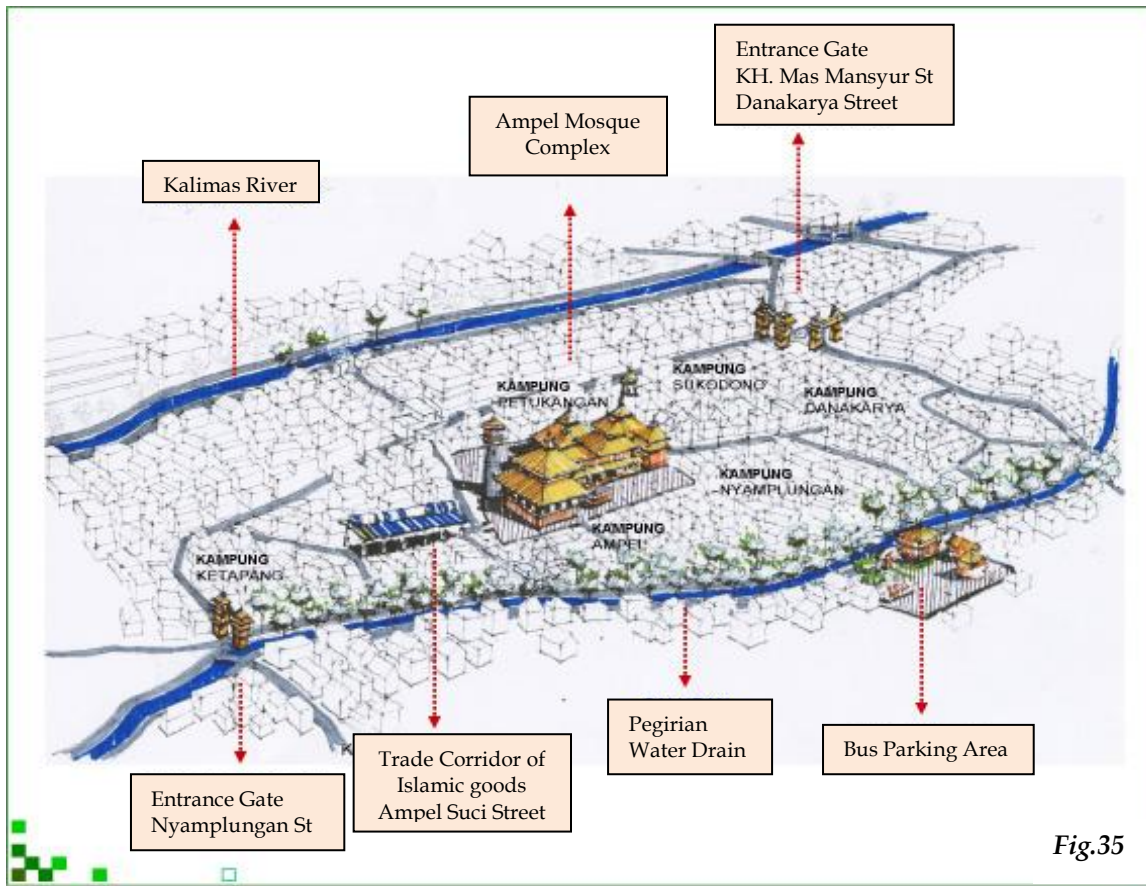


Fig.35

5.1 MOSQUE

5.1.1 OLD MOSQUE



Fig. 36

The roof of the mosque which the shape is Limasan (prism), originally covered by a kind of shingle lid (sirap). But now replaced by concrete roof tile.



Fig. 37

The terrace floor covered by terasso

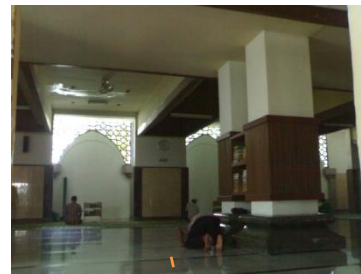


Fig. 38

The interior floor covered by marble

5.1.2 EXTENSION MOSQUE



Fig. 39

The shape of the roof top of the extension mosque is still Limasan (prism), but now covered by a kind of skylight and metal.



Fig. 40



Fig. 41

The terrace floor covered by granite tile

5.2 HOUSING



Fig. 42



Fig. 43



Fig. 44



Fig. 45



Fig. 46



Fig. 47

Fig 42, 43, 44, 45, 46, 47

Housing conditions in the study area reflects the features of the city center with a high density. Located in inner part of the sheath region, most type of housing are the residential units, one-floor homes, with the ancient regional architecture style.

5.3 TRADE AND SERVICE



Fig. 48 Pharmacy at KH. Mas Mansyur Street



Fig. 49 Shops along Sasak Street



Fig. 50 Vendors at Ampel Suci Street

5.4. PUBLIC FACILITIES



Fig. 51 Ablution place



Fig. 52 Public Toilet (Gents)



Fig. 53 Public Toilet (Ladies)



Fig. 54 Car Parking in local road



Fig. 55 Motorcycle Parking in local road



Fig. 56 Traditional Transportation Parking in local road

5.5 GREEN OPEN SPACE



Fig. 57 Public cemetery : not maintained and damaged



Fig. 58 Park & Playground

5.6 SURROUNDING AREA



Fig. 59 Kalimas River



Fig. 60 Ampel Market : look slums and not well-organized



Fig. 61 Environment around Kalimas



Fig. 62 Jembatan Merah (Red Bridge) : one of the access to The Ampel Area



Fig. 63 Street Vendors along Nyamplungan Street : look slum and not well-organized



Fig. 64 Parking at main road : cause the crowd & hinder the circulation of vehicles & pedestrians

6

MANAGEMENT PLAN

Several formulations are made to facilitate the design plan and the design direction. Those formulations are needed to develop environmental elements that need to be presented at the Ampel Area.

6.1 SPACE UTILIZATION PLANNING

6.1.1 LAND-USE FOR HOUSING

Land for housing function remains in current existing housing area, namely **Ampel Village, Nyamplungan Village, Danakarya Village, Sukodono Village, and Petukangan Village.**

a. Housing Village Settlement

Restructuring the village is directed to control the density of buildings, improving the physical quality of house building, and provision of basic facilities and housing.

b. Handling of Housing at the edge of the main road

Handling of housing located on the edge / near the main road (Nyamplungan Street and KH. Mas Mansyur Street) conducted in an integrated manner with the development of commercial activities in the area.

c. Development of Simplified Flats

Development of simplified flats is planned as part of the rejuvenation of the area, particularly on area that will be developed as an extension of Ampel Mosque complex. The area is in **Petukangan Village.**

6.1.2 LAND-USE FOR PUBLIC FACILITIES

The facilities are planned to remain in areas that have been utilized for the facility. They are located on KH. Mas Mansyur Street, Danakarya Street and in some lands in the neighborhood. The building types are including common facilities and office facilities such as social facilities, office buildings, health facilities, education facilities, worship facilities, government buildings, and the multipurpose building.

6.1.3 LAND-USE FOR PUBLIC TRADE

Land for the local scale trading aimed at Nyamplungan Street, KH. Mas Mansyur Street, and Sasak Street. It could be a single building to sell typical Islamic goods, which is a **traditional market and shops.**

6.1.4 LAND-USE FOR GREEN OPEN SPACE

Addition of land for green open space in the Ampel Area relatively difficult. For that, the presence of Green Open Space is planned by **maintaining the tombs around Ampel Mosque, sports fields, and parks and green lines on the edge of Nyamplungan water drain.**

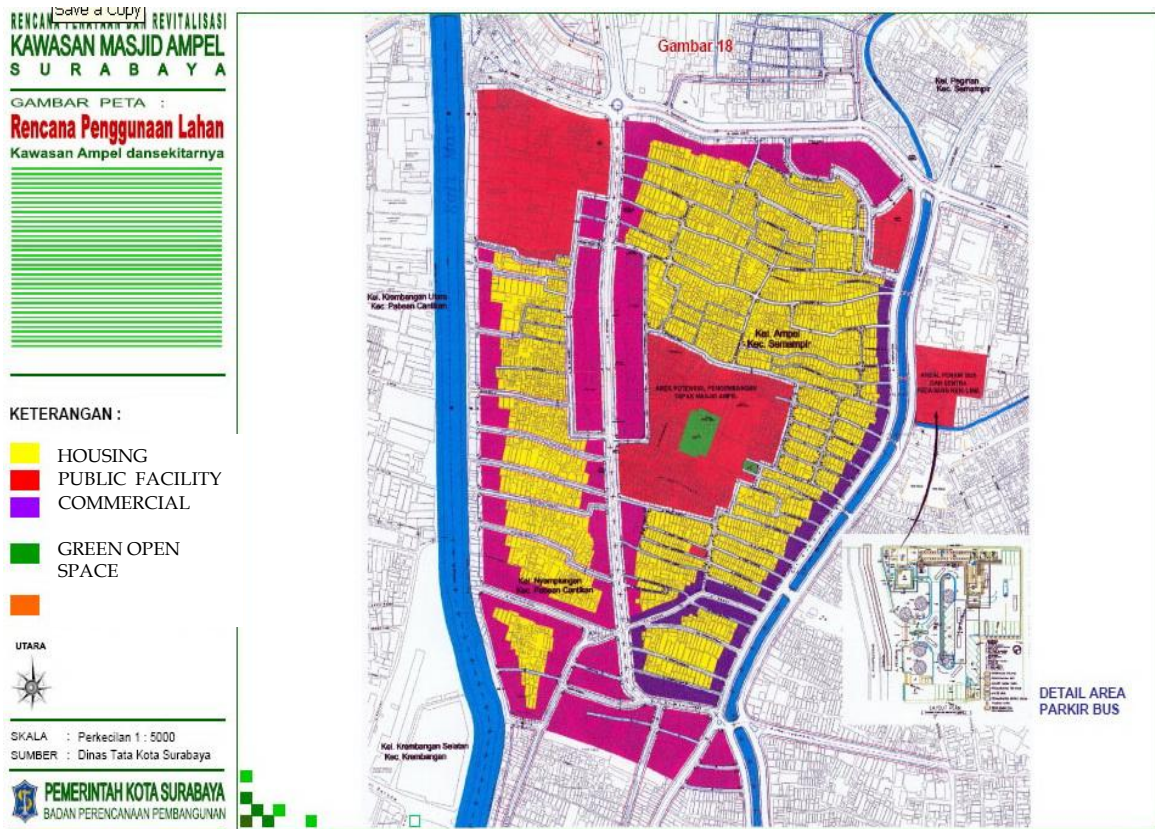


Fig. 65 Land-Use Planning

6.2 SPATIAL PLANNING

6.2.1 ENVIRONMENTAL PATTERN

Mass building arrangement in the Ampel area directed to **the physical arrangement of the buildings** consist of:

- a) **Development of basic shapes (mass) of the building, which is based on:**
 - The function of the buildings
 - Building Coverage Ratio (BCR)/Floor Area Ratio (FAR)
 - Visual factors and harmony of the building to the other buildings and surrounding environment
 - Oriented to physical appearance of Ampel Mosque
 - Accomodate the comfort and security aspects, and supports the efficiency of building use
- b) **Building Envelope**
It describes the maximum provision of the outer portion that surrounds the building / structure covering the entire building. Building envelope should be noted especially in non-residential buildings and a large mass buildings so that it can form a 'unity' to strengthen the area's identity as a 'worship' area.

6.2.2 SPATIAL FUNCTION

In Ampel area, green open space which developed as city garden is still lacking. Open area that is more widely used for the selling, and also used as a base for rickshaw. The potential concept of green open space to be developed in the Ampel area is the **space element for pedestrian sidewalk along the street.**

6.2.3 CREATING ENVIRONMENTAL IDENTITY

Environmental identity are created by developing 5 environmental aesthetics components,i.e :

- a) **Landmark (Environment Signage)**, such as :
 - Ampel Mosque Building
 - Gate as the entrance of the area
 - Structuring the park environment
 - Structuring the environment in the corridor Nyamplungan Street
 - Structuring the old town village
- b) **Nodes (Center of activity/ public space)**, such as :
 - Ampel commercial activities by building traditional market in the Ampel Mosque Area
 - Sideway trading activities
 - Trade center for selling goods of Islamic nuanced
 - Cultural Islamic art Arena
- c) **Edges (Area Boundaries)**
The boundaries of the area that can be attractive spot for Ampel Area identity expressed in terms of **the physical arrangement of street furniture**, to show that there is something interesting to be seen and visited after entering the area.
- d) **Pathway (Road Network)**
Will be implemented by:
 - Completing the main roads with sidewalks, lighting, bus stop, and street furniture, and also ornamental plants which designed artistically.
 - Completing the local roads by artistic lighting and plantation.
- e) **District**

6.2.4 GREENING

Greening in Ampel area implemented in arrangement of open space such as environment parks, and the green line along the edge and the middle Nyamplungan Street and KH. Mas Mansyur Street.

6.3 CIRCULATION AND ACCESSIBILITY PLANNING

6.3.1 ROAD NETWORK

The efforts to develop road network in Ampel Area planned by doing the following activities:

- a) Arrangement of local roads
- b) Development of road pavement
- c) Provision of line for motor vehicle

6.3.2 TRANSPORTATION INFRASTRUCTURE FACILITY

As a place to live, trade, and tourism, transportation infrastructure in the Ampel area that must be developed include:

- a) Public Transportation (vehicles) Base
- b) Traditional Transportation (not motorized) Base
- c) Pedestrian and Sidewalks
- d) Parking Area
- e) Public Street lighting
- f) Location for Cross Road and Overpass
- g) Road equipment /street furniture
- h) Signage and Information Board

6.4 BUILDING ARRANGEMENT PLANNING

Building Arrangement Planning in Ampel Area will be done by setting :

6.4.1 BUILDING COVERAGE RATIO (BCR)

- Housing building, BCR numbers arranged from 60% -90%
- Public Facility Buildings, the minimum number of BCR is 50%-70%

- Trade Facility Buildings, the minimum number of BCR is 50%-70%
- Special to land for Public Facilities and Trade Facilities, the remaining land that is not built (the rest of BCR) is directed not to be paving, which is 10% -20% of the rest of BCR calculations.

6.4.2 FLOOR AREA RATIO (FAR)

- Housing Buildings, the maximum number of FAR is 140% -180%
- Public Facility Buildings, the maximum number of FAR is 210%
- Trade Facility Buildings, the maximum number of FAR is 210-300% %

6.4.3 BUILDING SET BACK (BSB)

Building Set Back (BSB) is made in accordance with the width of the street where the building is located.

6.4.4 BUILDING HEIGHT

- Housing Buildings, the maximum height is 10 M – 15 M
- Public Facility Buildings, the maximum height is 20 M
- Trade Facility Buildings, the maximum height is 20 M – 40 M

Basically, the existence of buildings, especially in terms of height is **directed not to reduce the focus on the existence of Ampel Mosque Building.**

6.5 FACILITIES AND INFRASTRUCTURE DEVELOPMENT PLANNING

Facilities and infrastructure to be developed include:

6.5.1 EDUCATION FACILITIES

Such as schools, Studying Qur'an Course Building , Islamic School, etc.

6.5.2 HEALTH FACILITIES

Polyclinic and Medicine Stores

6.5.3 TRADE AND COMMERCIAL FACILITIES

Trade and commercial facilities in Ampel area include:

a) Trade/shopping Center Development

- Trade activities and **large-scale** commercial **service**, generally allocated at large land around Nyamplungan Street, Danakarya Street, and KH. Mas Mansyur Street
- Trade activities and **small-scale** commercial **services**, generally allocated in surrounding Ampel Mosque, as well as in several locations within the village. That is, the stalls which selling Islamic goods nuanced.

b) Provision and Location Arrangement of Street Vendors

- Placement for street vendors planned in a pattern or *cluster or centers*, to avoid uncontrolled settlement and disruption of other functions in surrounding area.
- Preferred location is on the land with public functions, such as the bus parking area on Pegirian Street and trade areas around Pegirian Market.
- Sought shape and design of street vendors' stands have character which can strengthen the distinctive characteristics of the Ampel area as a trade center of typical Islamic goods.

6.5.4 GREEN OPEN SPACE AND TOMB FACILITIES

Green Open Space and Tomb facilities include:

a) Green Open Space and Park Development

- Ideally, the number of parks needed in the area are difficult to fulfill because of the limited land available. The efforts need to be done to obtain an optimal open space are:
 - Maintaining and caring the park land that already exist in some places

- Utilizing the 10% portion of the remaining parcels from the calculation using the Building Coverage Ratio (BCR)
 - Developing green line in Nyamplungan corridor
- Pavement at the park should be made as minimum as possible, yet still can be used for local social activities, like sports, playground, and small traders.

b) Structuring Tomb Area

The effort needs to be done to maintain the availability of Tomb Facilities is: **Maintaining the existing land and restricting massive building construction in the Tomb Area.**

6.5.5 ART, CULTURE, AND INFORMATION FACILITIES

Art, Culture, and Tourist Information which need to be provide include :

- Islamic Art Gallery
- Open Space (plaza) for Islamic Cultural Art performances
- Souvenir Shop
- Tourist Information Pos

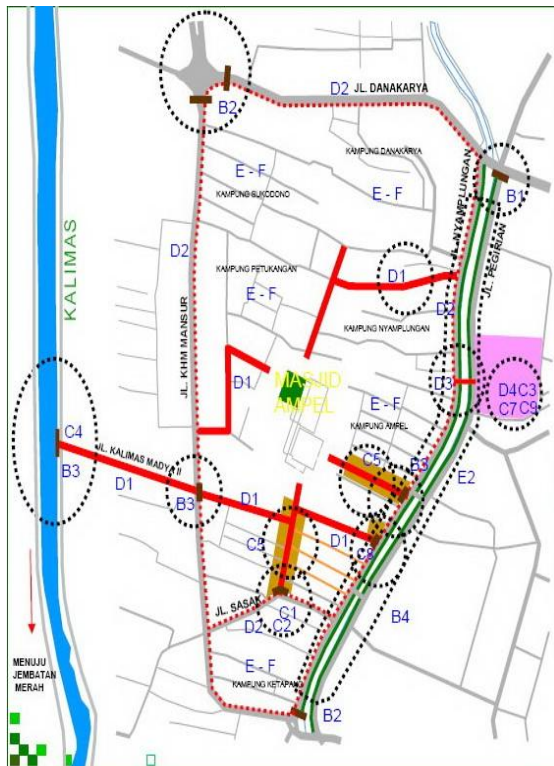
Location or space for art facility is directed at the area that adjoining with the Bus Parking facility on Pegirian Street since the available land is still widespread. While Pos for tourist information services can be placed at the point where the entrance of visitors Ampel Tourism Area is, as in:

- Bus Parking area
- At the end of Ampel Masjid Street
- Ampel Suci street
- Ampel Market
- Boat dock area at the edge of Kalimas (and Kalimas Madya street)
- Gate area at the intersection of KH. Mas Mansyur street, Pegirian Street, and Nyamplungan Street

7

WORK PLAN - TIME SCHEDULE - BUDGET

The plan for the re-arrangement programs for the Ampel masjid area will be focused in the development of the area as the religious tourism designation. The indication of the programs are as follows:

**A. DEVELOPMENT OF AMPEL MOSQUE FACILITIES**

- A.1. Extension Of The Site Around The Mosque
- A.2. Development Of Library And Museum
- A.3. Development / Improvement Of Public Toilet Facility
- A.4. Development / Improvement Of Rest Room Facility For Pilgrims

B. DEVELOPMENT OF AMPEL MOSQUE AREA IDENTITY

- B.1. Development of the new gates of Ampel Mosque area
- B.2. Development for the completeness of the gates
- B.3. New development and environmental improvement for the gates around Ampel Mosque
- B.4. Development of Nyamplungan corridor

Fig. 66

C. DEVELOPMENT OF SUPPORTING FACILITIES IN THE TOURISM AREA

- C.1. Development of building security pos
- C.2. Development of tourist information building
- C.3. Development of islamic cultural festival area
- C.4. Development of tourism facilities in Kalimas River
- C.5. Structuring informal trade center corridor
- C.6. Development of public toilet facility
- C.7. Structuring traditional market building
- C.8. Structuring informal business facilities

D. DEVELOPMENT OF INFRASTRUCTURE CIRCULATION AND PARKING

- D.1. Correction/ development of pedestrian street
- D.2. Correction/ development of pavement
- D.3. Development of crosswalk infrastructure
- D.4. Provision of bus parking facility
- D.5. Provision of incidental parking facilities

There are many aspects involved in the indication programs, as it can be seen above. Therefore in this paper, I limit the planning only for part C, ie SUPPORTING DEVELOPMENT OF TOURISM FACILITIES IN THE AREA. The details of the program are as follows:

C	ACTIVITY DETAILS	DESCRIPTION	FORM OF ACTIVITY	INSTITUTIONAL PARTICIPATION		
				GOVERNMENT	INHABITANT	PRIVATE
1	Development of security pos building	To help the visitors and local residents to gain security and peace during worship or while they were at Ampel Mosque area and its surroundings	Developing of security pos facilities/ which amount adjusted to the field situation and the available space.	Tourism Dept Regional Police Dept	Public Security Dept (PSD)	*
2	Development of tourist information building	To assist visitors in obtaining information about objects and the history of Ampel Mosque and Surabaya city	Developing of Tourist Information facilities which amount adjusted to the field situation and the available space.	Tourism Dept Private Co	PSD	YES
3	Development of islamic cultural festival area	To provide facilities or space to regional accommodate activities that promote tourist attraction, a cultural arts activities of Islamic nuance that could be held periodically.	Build a semi-permanent stage that can accommodate visitors and art activities.	Tourism Dept	PSD	YES
4	Development of tourism facilities in Kalimas River	To provide access and tourism relations between the Kalimas River area and the Jembatan Merah area.	Kalimas River; Boat Dock Construction, Pedestrian, Park Settlement, Making Gate.	Tourism Dept Irrigation Dept	PSD	YES
5	Structuring informal trade center corridor	To set the existence of economic activities without disturbing the peace, security and comfort of visitors / pilgrims that will serve the Ampel Mosque. The arrangement provides a unique characteristic	Arrangement stands / property	Tourism Dept Cooperative Dept Informal Sector	PSD Vendor Community	*
6	Development of public toilet facility	To provide facilities for improving the quality of a clean environment and healthy	Physical Development of Public Toilet	Cleaning Dept	PSD	YES
7	Structuring traditional market building	To set the existence of traditional market building in order to provide security & comfort as well as provide a unique arrangement and characteristics of the area , both in the physical design of buildings and goods	Arrangement of Vendor booth in Traditional Market to be more well-ordered and to form harmony with Ampel Mosque Building	Tourism Dept	PSD	YES
8	Structuring informal business facilities	To arrange the presence of street vendors to be more well-ordered ; Providing a unique arrangement to vendors in order to strengthen the	Setting the points of location and arrangement of street vendors booth /property in the center of parking area	Tourism Dept Cooperative Dept Informal Sector	PSD Vendor Community	YES

Tabel 3

C	ACTIVITY DETAILS	LOCATION	SPEC	BUDGET PLANNING		FUNDING SOURCES	YEAR			
				VOLUME	BUDGET		2009	2010	2011	2012
1	Development of building security Pos	Jl. Ampel Suci Jl. Ampel Masjid Jl. Ampel Maghfur Jl. Nyamplungan	Concrete Construction	4 units	10000 USD	Local Revenue & Expenditure Public Funds		0		
2	Development of tourist information Building	Jl. Ampel Suci Jl. Ampel Masjid Jl. Ampel Maghfur Jl. Nyamplungan	Concrete Construction	4 units	10000 USD	Local Revenue & Expenditure Public Funds		0	0	
3	Development of islamic cultural festival area	Bus Parking Area	Non-Permanent Construction	1 units (100 M2)	3000 USD	Local Revenue & Expenditure Public Funds	0	0		
4	Development of tourism facilities in Kalimas River	along The Kalimas River	Mix Constr	1 pax	75000 USD	Local Revenue & Expenditure Public Funds	0	0		
5	Structuring informal trade center corridor	Jl. Ampel Suci Jl. Ampel Masjid	Paving Mix Const	500 M	10000 USD	Local Revenue & Expenditure Public Funds		0	0	0
6	Development of public toilet facility	Ampel Mosque Area	Concrete Construction	8 units	5000 USD	Local Revenue & Expenditure Public Funds		0		
7	Structuring traditional market Building	Nyamplungan Street	Concrete Construction	1 units	25000 USD	Local Revenue & Expenditure Public Funds		0	0	
8	Structuring informal business facilities	Bus Parking Area		600 M2	6000 USD	Local Revenue & Expenditure Public Funds	0			

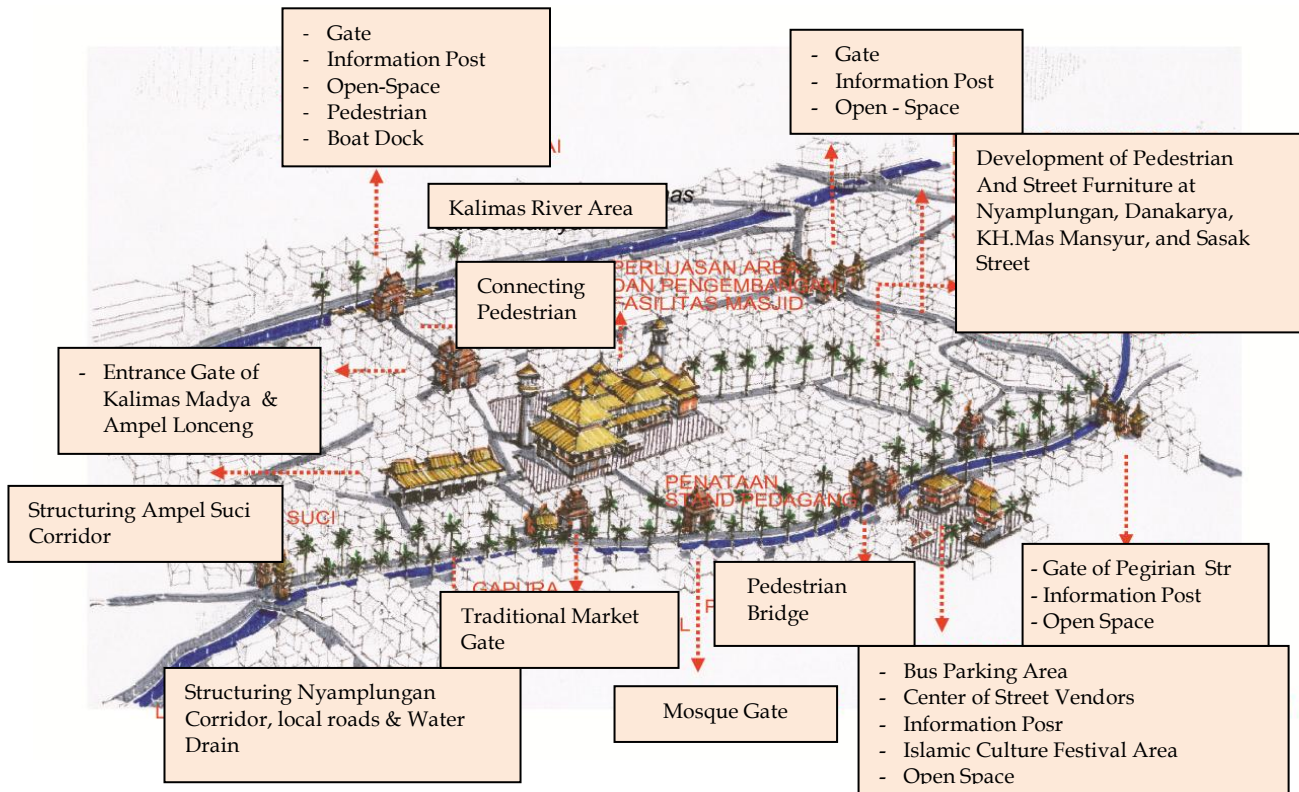


Fig. 67
PROJECT DEVELOPMENT PLAN IN AMPEL AREA

ILLUSTRATION 1

Development of Gateway (Pegirian Street)

PRESENT SITUATION



Fig. 68

PLANNING SKETCH

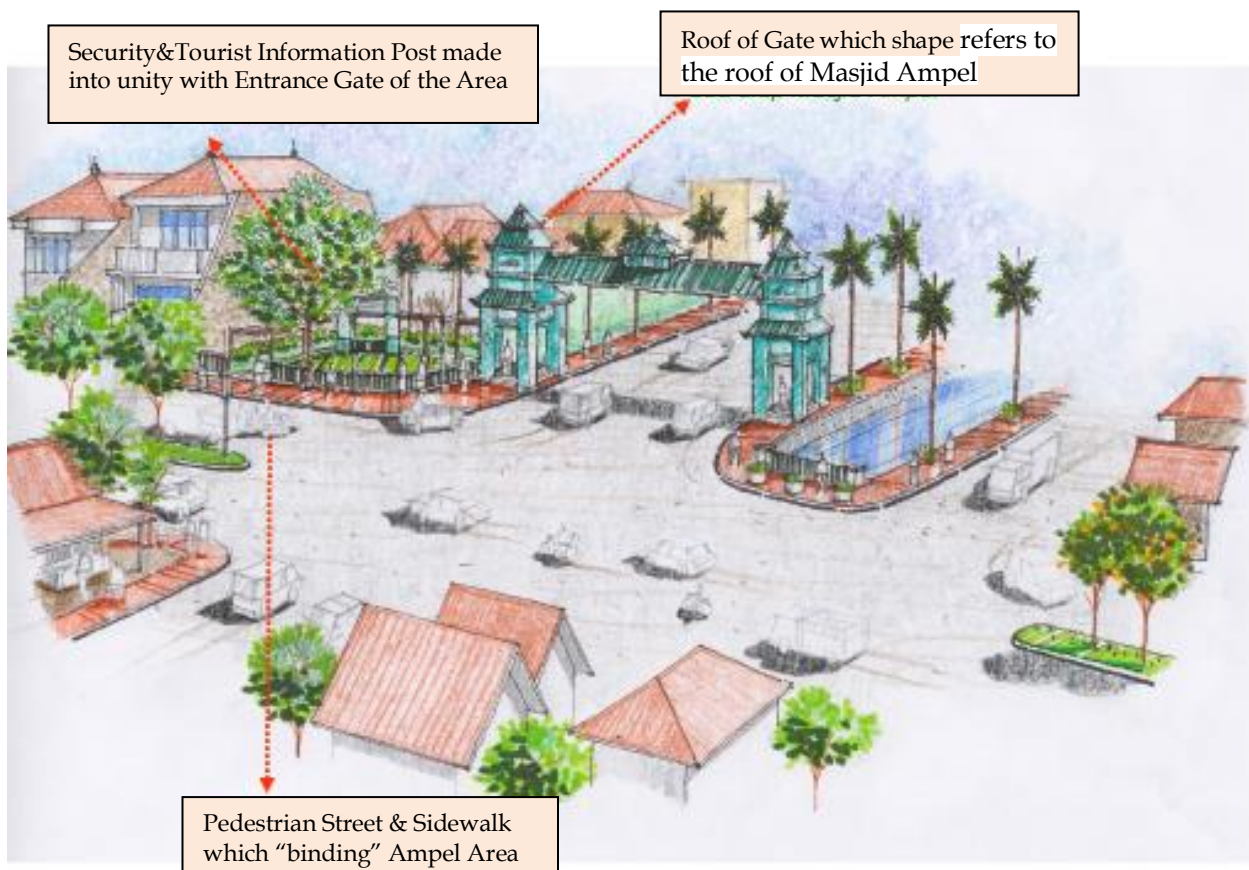


Fig. 69

The infrastructure around the Entrance Gate between Danakarya Street and KH. Mas Mansyur Street will be arranged to strengthen the characteristic of the Area by structuring the pedestrian street, Security and Tourist Information Pos, and Street Park.

ILLUSTRATION 2

Facilities around Danakarya-KH.Mas Mansyur

PRESENT SITUATION



Fig. 70

PLANNING SKETCH



Fig. 71

Environment around the two existing Gate arranged to strengthen the characteristics of Ampel Area by structuring the sidewalk, providing tourism information and security pos which well equipped with park

ILLUSTRATION 3

Access Arrangement Between Mosque with Kalimas

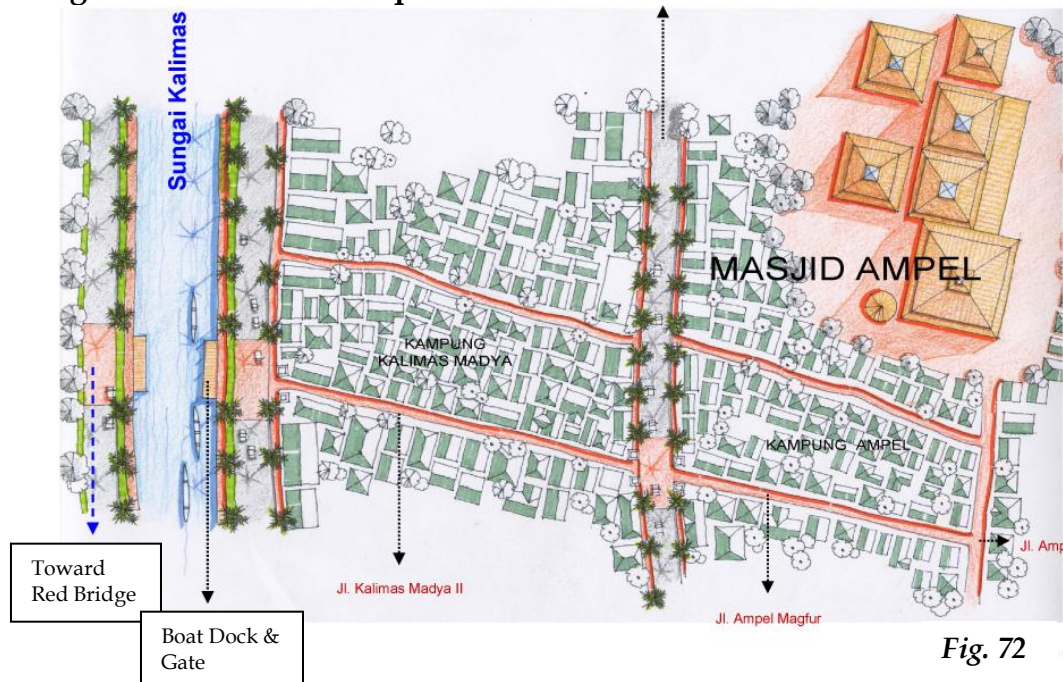


Fig. 72

Structuring or access improvements / line between the Ampel Mosque Area and Kalimas River (potential tourist objects) performed on Pedestrian in Magfur Ampel Street, Ampel Lonceng Street, crossings and sidewalks in KH. Mas Mansur Street, pedestrian on Jl. Madya Kalimas II and III, pedestrian and green lines on Jl. East Kalimas and provision the boat dock and Gate at the edge of Kalimas River.



Fig. 73

Restructuring or reforming the atmosphere on the path between the Ampel Mosque Area and Kalimas River conducted to create safety, comfortable, orderly and calm environment so that the pilgrims can feel solemn in worship .

Atmosphere above strived by fixing the physical environment (sidewalks, pedestrian facilities), the green line (plants), gate construction and boat docks and public areas for activities around the Kalimas River, especially those towards the Red Bridge area.

ILLUSTRATION 4 PRESENT SITUATION



Fig. 74 Bus Parking Area

PLANNING SKETCH



Fig. 75 Cultural-Art Islamic Festival Area

Place of performance art can be provided incidentally in parking area on Pegirian Street. Place of performance is made from the stage that is not permanent (can be dismantled-pairs) and movable. Facilities are provided to accommodate and express the potential of the existing Islamic art in the community especially local residents. The existence of performance art can provide benefits to the traders / vendors with the additional visitors.

ILLUSTRATION 5

Boat- deck Facilities in Kalimas River (As support facilities to Ampel Area)

PRESENT SITUATION



Fig. 76



Fig. 77

PLANNING SKETC



Fig. 78

Provision of boat dock on Kalimas River intends to support access from Ampel Area to Kalimas River Area. It is also part of efforts to develop water transportation system in Kalimas River. Around the boat dock will also be equipped with Gate, pedestrian, green line and public spaces. It is also intended to encourage improvement surrounding environment.

ILLUSTRATION 6

Structuring Street Vendors at Ampel Masjid Street

PRESENT SITUATION



Fig. 79

PLANNING SKETCH



Fig. 80

Corridor of Ampel Masjid Street arranged such that the arrangement of booths / shops do not interfere the circulation of the pilgrims. And there is a separation line between the pilgrims who go to the Ampel Mosque with those who left Ampel Mosque. The road will be improved with pavement.

ILLUSTRATION 7

Structuring Street Vendors at Ampel Suci Street

PRESENT SITUATION



Fig. 81

PLANNING SKETCH



Fig. 82

Structuring the environment / physical buildings in the corridor Ampel Suci Street directed to be integrated with building design of Ampel Mosque complex, for example in terms of building materials, formation of Canopi, building element, etc.

ILLUSTRATION 8

Development of Traditional Market at Nyamplungan Street

PRESENT SITUATION



Fig. 83

PLANNING SKETCH



Fig. 84

Setup booth vendors in traditional markets to be well-organized and to form harmony with Ampel Mosque building, done by adapting the design and ornamentation of the building element of Ampel Mosque, especially from the Main Gate.

ILLUSTRATION 9

Public Toilet Facility

PRESENT SITUATION



Fig. 85

PLANNING SKETCH



Fig. 86

Development or provision of toilet facilities should be representative of the Ampel Mosque environment.

Facilities are at least able to represent the importance of cleanliness and purity for people (pilgrims) and the environment in the area and surrounding Ampel Mosque.

ILLUSTRATION 10

Entrance Gate of Ampel Masjid Street

PRESENT SITUATION



Fig. 87

PLANNING SKETCH



Fig. 88

Placement signs and fences in front of Ampel Masjid Gate is intended to reduce / prevent the crowd of motor vehicles / not motorized and the people in front of the gate that could interfere with the view to the Ampel environment and the circulation in the entrance / exit.

ILLUSTRATION 11

Detail of The Gate

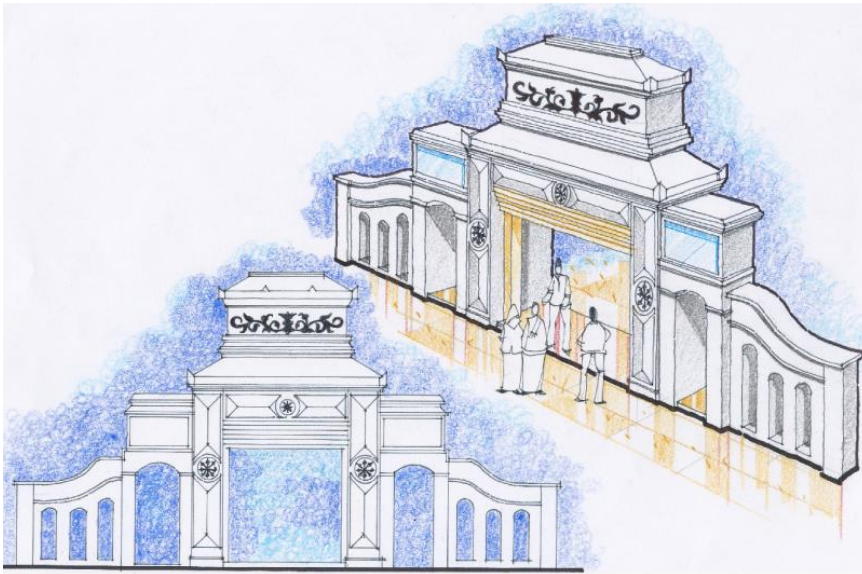


Fig. 89

Details of Gate building, basically developed from the architectural elements contained in Ampel Mosque complex.

ILLUSTRATION 12

Bus stop and Sidewalk

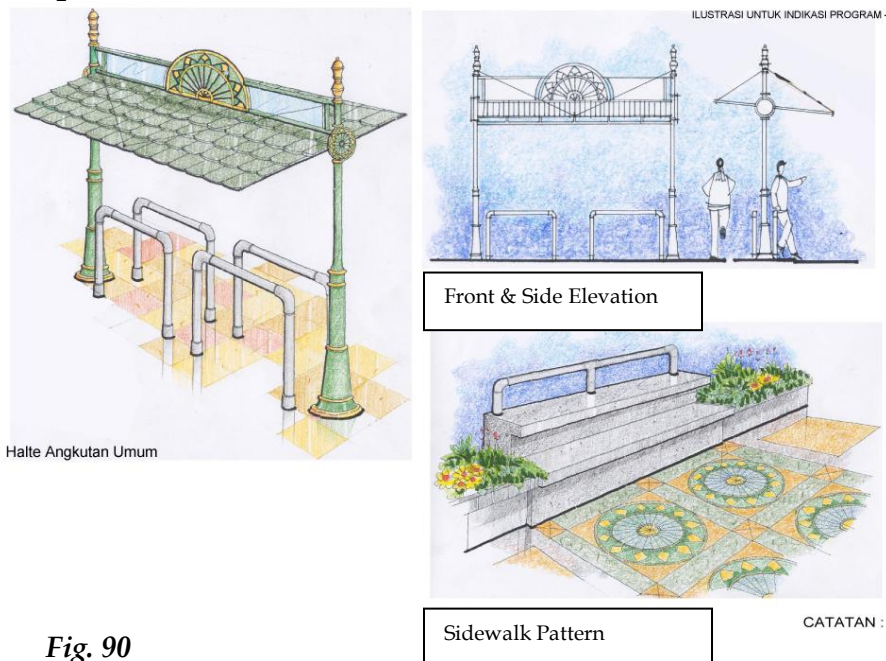


Fig. 90

ILLUSTRATION 13

Detail of Street Furniture

ILUSTRASI UNTUK INDIKASI PROGRAM – 02



Fig. 91

Street Lighting

Forms of lighting, information boards, and Waste Basket uniformly used in the network of roads and sidewalks in Nyamplungan Street, Danakarya Street, KH.Mas Mansyur Sasak Street Street and the surrounding Ampel Area.



Information Board/Signage

Waste Basket

Fig. 92

ILLUSTRATION 14

Pedestrian Bridge above the water drain at Pegirian Street (in front of Bus Parking Area)

PRESENT SITUATION



Fig. 93

PLANNING SKETCH



Fig. 94

Crossing facilities above the water drain at Pegirian Street in front of The Bus Station will be planned to build into two bridges (twin); **the first:** for pilgrims who lead to Ampel Mosque, **the second:** for those who lead to the Bus Station. The aim is to avoid the crowd of pilgrims.

In front of the bridge given the fence, so the pilgrims can be more careful with the path of cars on the road (Nyamplungan Street and Pegirian Street) before crossing.

Bridge design is made in such a way as to blend with the look of the Ampel mosque building.

8

METHOD

The Revitalization Plan will be carried out by doing method as follows :

1. RESEARCH INFORMATION

Gathering of data were done by library research. Books, references at Local Library of Surabaya and Planning and Development Department of Local Government of Surabaya were collected. And Information regarding the history of Ampel Mosque Area was collected to obtain important historical fact, map, and photograph to have a comparative analysis of the changes and developments to the object.

2. SURVEY AND DOCUMENTATION

A survey was conducted through ocular inspection of the site to investigate existing conditions of the object and be able to determine the process of structuring and revitalization of Ampel Mosque Area. Photo documentation was conducted for inventory of existing condition for architectural aspect of the object.

9

RESULT/CURRENT STATUS OF THE WORK

The planning is still in progress. Coordination between the concerned institutions and organizations are still on going. The proposed program of work has been done to raise funding from local and national organization. From them, a plan for action will be further studied as to what aspect of the object should be conserved primarily. Setting up of priorities will be evaluated so that short-term and long-term goals would be drafted and specified.

10

DISCUSSION & CONCLUSION

Designing or planning conservation for historic object must consider the harmony between new buildings/ areas and the old ones. The goal is continuity between the new buildings/ area with the old ones. This is important because the building or area can provide the identity or characteristics of a city to its past history.

The principle of cooperation between local government, cultural conservation managers, academics, NGOs, observers conservation, and private, can be a solution that the architecture and history is an expression of national identity.

For that, Ampel Religious Tourism Area as a region that contains the historical value the arrangement for the city of Surabaya require attention, so it needs to revitalize to organize the area to be more well-ordered, to improve the function of the area by optimizing its potencies and its strategic values, and to carry back the area vitality. At the end, it is expected that the effort would assist the area to achieve more values which would be indicated by an increase of economic productivity, as well as social and culture values of the urban area. I.e by changing a few places that can be used for a more appropriate function, which does not require drastic changes, or which just need a minimal impact.

11

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