

REVITALIZING TIO CHEW CHINESE CEMETERY THROUGH A DESIGN OF AN ELDERLY  
CENTER



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บทคัดย่อและแฟ้มข้อมูลฉบับเต็มของวิทยานิพนธ์ตั้งแต่ปีการศึกษา 2554 ที่ให้บริการในคลังปัญญาจุฬาฯ (CUIR)  
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การฟื้นฟูสุขภาพแต่ใจผ่านการออกแบบศูนย์ผู้สูงอายุ



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By Miss Khai Sin Lee

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การนำเสนอพื้นที่ใช้งานสำหรับผู้สูงอายุนั้นจึงไม่เพียงให้ประโยชน์ต่อผู้สูงอายุเท่านั้น แต่ยังเป็น  
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Old cemeteries are often threatened by new urban development, which can result in them being closed, relocated or demolished. This thesis studies Tio Chew Cemetery in Bangkok as an alternative case based on its current unique use as a recreation area. Although without the threats of demolition, several on-site issues, both tangible and intangible, are facing Tio Chew Cemetery. To respond to these issues, a design of an elderly center is proposed to improve and revitalize the cemetery through the understanding of historical importance and contemporary design of new buildings in the old compound.

This research applies a mixed methodology of archival studies, oral history, field observations, and architectural measure works to analyze the cemetery and the historical buildings. Further, case studies of adaptive reuse, new designs in old compounds and designs for the elderly are studied as the design references.

The design of an elderly center serves as an alternative design approach that responds to current site conditions and opportunities for the future. The provision of programs for the elderly is designed to not only benefit the elderly, but also involve the old and younger generations through new programs and activities that offer the possibility to sustain this historic site. The design outcome is formed by an understanding of history, present issues, and possibilities for the future.

Field of Study: Architectural Design

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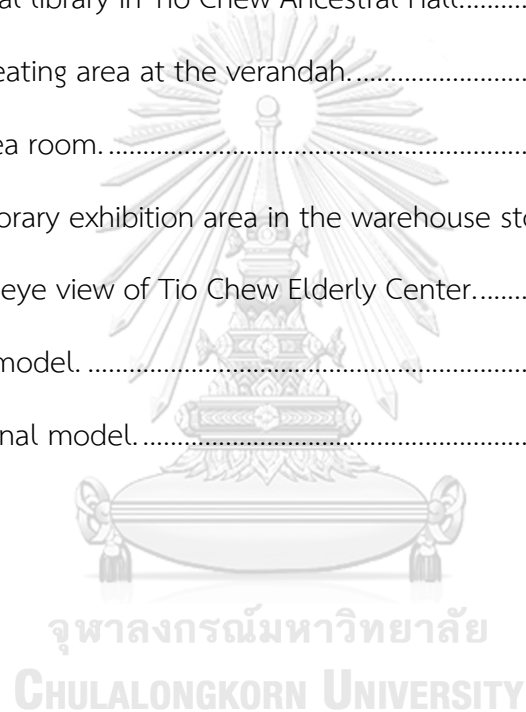
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## NOTES

### Romanization

In this thesis, all the Chinese characters for the names of buildings, names of places, and Chinese organizations are transliterated from Chinese to the Roman alphabet through *Han Yu Pin Yin*, the widely-used transliteration system of standard Chinese language.

Further, some terms are transliterated from the direct pronunciation of Tio Chew language. For example, the general term “Tio Chew” is used instead of “Tae Chew” (pronunciation in Thai) by following archival sources from Tio Chew Chinese Association. All Chinese characters are translated to *Han Yu Pin Yin* and typed in italics.



## CHAPTER 1

### INTRODUCTION

#### 1.1 Problem Statement & Research Significance

In most developing countries, historic buildings and sites are often threatened by new urban development. In Bangkok, many old Chinese cemeteries have been cleared, closed, or relocated. In fact, the relocation and expansion of cemeteries into provinces such as Chonburi and Saraburi have been done in past decades due to the availability of space and better locations regarding *Feng Shui*. However, decisions regarding cemetery clearance is complicated, and it is an unfavorable task due to complex reasons, including the government's policies, the governance of the cemeteries, and resistances from the owners of graves.

In existence for over 100 years, Pa Cha Wat Don or Tio Chew Cemetery, one of the largest Chinese cemeteries in Bangkok, is the case study for this research. Serving as a burial site for Chinese for over a century, the cemetery is owned by Tio Chew Association of Thailand. It has been partially used as a recreation area since 1996. The land use changes were mainly caused by two reasons. First, the initial decision of Tio Chew Association to provide more walkability and accessibility for visitors, especially during the Chinese *Qing Ming* Festival, or Tomb-sweeping Festival, resulted in the reconstruction of internal roads and landscaping as a beautification measure in the cemetery compound. Second, the changes were the result of requests of residents in surrounding areas to have a public park because open spaces are limited in the dense residential area.

Although Tio Chew Cemetery is not under the threat of demolition, it is facing an uneasy situation as the association intends to create a development plan for the cemetery but has remained inactive due to oppositions from the families who own the graves. Further, without historical awareness, improperly built temporary structures for recreation activities in the cemetery were constructed without the permission of

Tio Chew Association. These actions have been perceived by the association as disrespect for existing graves.

Therefore, this research attempts to understand the historical values and cultural significance of Tio Chew Association and Tio Chew Cemetery. Examining the land use changes to a recreation area as a unique urban changed, a design project that responds to the historical context and contemporary needs is proposed to revitalize this historical site.

## 1.2 Purpose of Study

This research aims to offer an architectural project in response to the context and current issues of a historical site through the case of Tio Chew Chinese Cemetery. As part of the cemetery is currently used as a recreation park, an elderly center is proposed to respond to issues of the site and improves its functionality to benefit the elderly, who are its major users.

Further, the research studies Tio Chew Association help to understand the roles, identity and social development of Chinese communities in Thailand through research on historical developments and architectural studies of Tio Chew Chinese Cemetery and the historical buildings within the cemetery compound.

## 1.3 Scopes of Study

Architectural studies of Chinese society in Thailand have widely discussed cases of Chinese courtyard houses, Chinese shrines and shophouses. This thesis extends studies on Chinese architecture in Thailand through the selection of Tio Chew Cemetery, which is administered by and tied closely to Tio Chew Association of Thailand. Historical research is conducted, including a review of the historical background such as the association's establishment, visions and contributions, to provide a general understanding of Chinese communities through Chinese associations in Thailand, Tio Chew Association in particular.

Further, the selection of Tio Chew Cemetery is due to its current partial use as a recreation area and the author's preliminary observations and interviews. By taking this unique urban phenomenon as a positive change, the author proposes a potential new design for this historic site. So, studies of the physical development of and existing buildings within the cemetery are analyzed, with the aim of understanding the relationships of the existing buildings and their context. The buildings are Tio Chew Ancestral Hall, Tio Chew Old Office of Cemetery Affair, Tio Chew Cemetery Hall, the Crematorium Pavilion, storage for urns, and an elaborate grave.

Through historical research on Tio Chew Association and Tio Chew Cemetery, an elderly center is proposed as a new design that addresses contemporary issues and needs. The design scope includes only a building design instead of proposing a master plan for the cemetery. Therefore, new designs in old compounds and adaptive reuse are studied as the main design references.

#### 1.4 Methodology

This thesis begins with a literature review of cemeteries to understand their nature and issues associated with them from the bigger picture. Field observations and interviews with the manager of Tio Chew Association and users of Tio Chew Cemetery contributed to an understanding of overall site issues and programs for the design project. The aim is to present a design outcome with an understanding of the past that is responsive to the present and the future.

To achieve this, historical research served as the primary source for the design project. It was conducted with a mixed methodology of archival studies, oral history, architectural analysis, field observations, informal interviews and case studies.

Firstly, the history of Chinese association in Thailand, Tio Chew Association, and Tio Chew Cemetery were studied mainly from historical documentation. Archival studies, mainly from the association's anniversary commemorative publications, which contains historical records and event's photographs, were reviewed. It was useful when available resources were written mainly in Chinese language, which gave the author a better understanding of the relevant information.

Furthermore, architectural analysis of the existing buildings in Tio Chew Cemetery was conducted to understand the current context. Due to the limitations of architectural data in the association's yearbooks, the architectural analysis was conducted based on oral history. Further, measure works are conducted to produce architectural drawings due to the unavailability of original drawings. Architectural aspects such as building zoning, layout and elements were analyzed through the oral history, measured drawings, old maps, and photographs.

Through the historical research, the design of an elderly center was created with an understanding of adaptive reuse, new designs in old compounds, and design for aging societies. Relevant case studies were used to comprehend the design approach of a new building in an old compound.





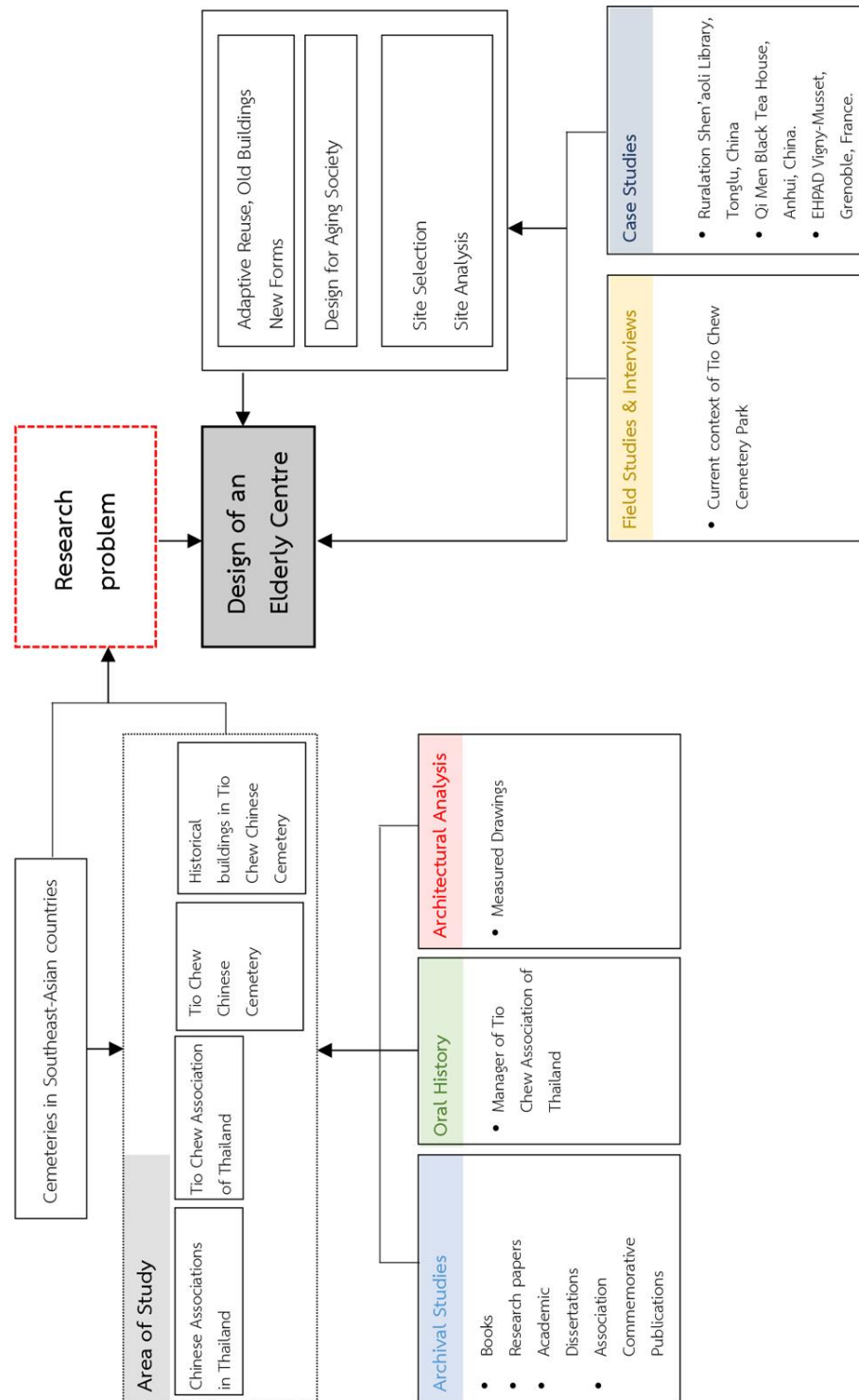


Table 1. 1 Summary of research methodology.

## 1.5 Benefits of the Study

Firstly, the study of Tio Chew Cemetery provides a better understanding of the historical importance and cultural significance of the historical site through the role of Tio Chew Association in Thailand.

Secondly, Tio Chew Cemetery is examined from a wider perspective regarding the nature of historical sites under the threat of rapid urban development in the city. Issues such as demolition and, deterioration of old buildings on historical sites are associated with expansion of the city. Therefore, the partial land use changed of Tio Chew cemetery to a public recreation area is an interesting case that involves the realization of preserving and sustaining a historical burial site for better alternative usages.

In addition, from a smaller perspective focused on the particular site, the active used of the cemetery as a park and the frequent presence of residents raises the issue of lack of open spaces in this dense residential area. It was observed that the elderly are the major users of the cemetery park. Thus, an elderly center is proposed to benefit this group with more functions and facilities to provide a better leisure and social environment. The design presents the possibilities and opportunities to respond to the past, present and future.

## CHAPTER 2

### LITERATURE REVIEW

The literature review begins with an overview of topics related to the research on the cemetery and continues with two international cases in Singapore and Malaysia to understand the research problems and issues in relation to urban threats. The review continues with the topics of adaptive reuse and design for aging societies, which are used in the latter part of this thesis as design references.

#### 2.1 Cemeteries as Landscape of Collective Memory and Identity

Cemeteries have often been discussed in relation to cultural identity and diaspora condition as the research significances. In most developing cities, cemeteries have been threatened by new urban developments, which has resulted in them being demolished, closed or relocated. This phenomenon has been subjected to urban issues, which becomes complex when different parties, including the policy makers, the administrators of the cemeteries, and the families or descendants, are involved. Thus, existing architectural studies emphasize issues of urban development regarding the threats to and challenges on cemeteries through the analysis of identity, culture, tradition and their historical importance.

As studies of cemeteries in Thailand are limited, the literature review covers two overseas cases, namely Bukit Brown Cemetery in Singapore and Cantonese Chinese Cemetery in Kuala Lumpur. The selection of both cases was based on the presence of similar urban issues that resulted different outcomes and uncertainties for the cemeteries.

### 2.1.1 Bukit Brown Cemetery in Singapore

Located within a dense forest in the heart of metropolitan Singapore, bounded by two main roads and an expressway, is a Chinese burial ground with over 200,000 tombs. Bukit Brown Cemetery is recognized as the largest burial ground outside of China and includes three clan cemeteries and a municipal cemetery (Tan, 2014). However, this huge historical burial site was endangered when plans of housing developments and massive infrastructural works were announced by Singapore's Urban Redevelopment Authority in 2011. Consequently, public reaction was raised, resulting in meetings between government agencies and civil society groups, online petitions, exhibitions, symposiums, documentaries, and seminars, which were carried out to address the historical and heritage significance of the cemetery (Chong, 2014).



Figure 2. 1 Bukit Brown Cemetery, Singapore (Source: Wikipedia).



Figure 2. 2 Cemetery tour in Bukit Brown Cemetery, 2013 (Source: <https://www.wmf.org/project/bukit-brown>).

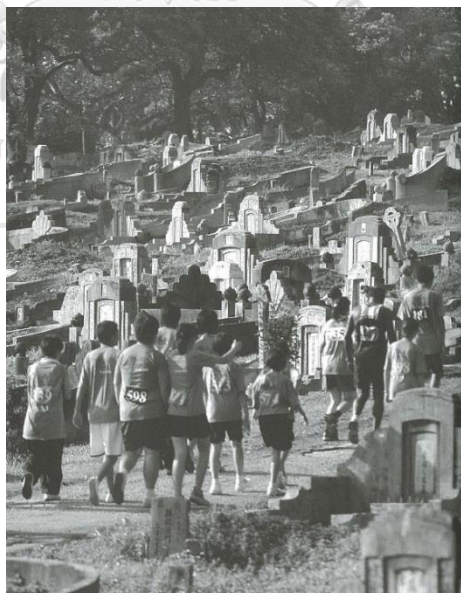
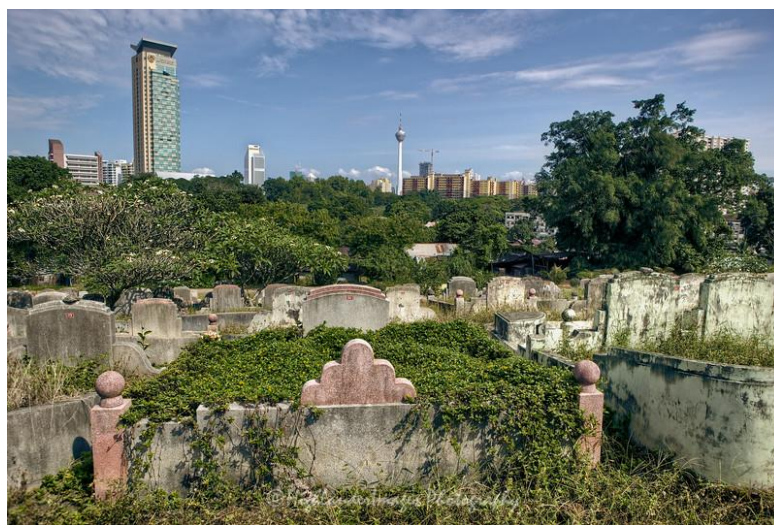
Therefore, existing researchers, mainly from the field of cultural studies, have taken the urban threats to Bukit Brown Cemetery as a departure point to address cultural values, historical significance, and more importantly, the question on how identity is anchored to the cemetery. Cultural historian Terrence Chong addressed the threat to Bukit Brown Cemetery as the concept of “worlding”. He brings out Singapore’s bureaucratic imagination of “good life” through notions of quickening economic growth, urban transport efficiency and massive housing developments as urban trends in Singapore that have challenged the fates of several heritage sites, Bukit Brown Cemetery being one of these. Several points such as the authenticity, multiculturalism and naturalness are described as theoretical approaches to emphasize the heritage values of the cemetery. Further, other architectural analysis applies theories of identity to spatial conditions of Bukit Brown Cemetery. For example, scholar Tan Jing Xiang explained the tombs in Bukit Brown Cemetery as physical anchors where familiar identities are related to the site through the discussion of ritual practices. Moreover, cemetery tours also discuss how community participation helps to procure history and remembering Bukit Brown Cemetery (Tan, 2014)

### 2.1.2 Cantonese Chinese Cemetery in Kuala Lumpur

On the other hand, a similar research problem is presented through the case of Cantonese Chinese Cemetery in Kuala Lumpur. The rise of a new skyline in the 1990s affected one of the largest Chinese cemeteries in Kuala Lumpur, which was threatened with the risk of being closed or evicted for urban development (Loo, 2013).

There are few existing studies on Kuala Lumpur Chinese Cemetery. Scholar Loo Yat Ming revealed the cemetery as a site of contestation. He focused on the complexity of resistance and political oppression towards the re-appropriation of the cemetery to a historic open space, which is a heritage park in the present (Loo, 2013). Similar to the case in Singapore, several important points regarding the historical development and cultural meanings of Cantonese Chinese Cemetery in Kuala Lumpur are discussed. First, the cemetery represents the diaspora condition of Chinese communities. Second, it is

a burial site of many pioneers in the early days of Kuala Lumpur. Further, it is a site to trace the roots of ancestors. The architecture analysis includes historical buildings, tombs, and monuments, as well as community participation in various activities to understand the current construction of the cemetery as a cultural archive. The final part of his research also includes his alternative interpretation of multicultural Malaysian nationalism to address the Chinese diasporic identity, and the link between place (cemetery) and history in the country.



*Figure 2. 3 Cantonese Chinese Cemetery, Kuala Lumpur (Source: Wikipedia) (Above).*

*Figure 2. 4 Cemetery Walk in Cantonese Chinese Cemetery, Kuala Lumpur (Loo, 2013) (Below).*

In summary, both cases address issues of urban development and threats to the cemeteries based on different political, social and cultural circumstances. Although they face different uncertainties and outcomes, both cases are discussed in relation to conservation. Public reaction through all kinds of activities and events explains the historical importance and cultural meaning of the cemeteries to the relevant descendants and communities. The tombs, monuments, and historical buildings are equally important as cultural artefacts through cultural studies and architectural analysis.

While seeing urban development as an inescapable phenomenon, this thesis fills the research gap with the selection of Tio Chew Cemetery in Bangkok which encountered an entirely different situation and is currently a recreation area. The research continues with a design project to understand how a new building can sustain a historic site through an understanding of the history of the site, its present issues, and possibilities for the future.

## 2.2 Adaptive Reuse and New Buildings in Old Compounds

In accordance with the design intention to respond to the past, present and future, studies of adaptive reuse or new designs in old compounds are taken as ideal design approaches, methods and strategies in Tio Chew Cemetery.

The topics of adaptive reuse and new designs in old compounds have received attention since the late 20<sup>th</sup> century, when new ideas and disciplines in conservation emerged, followed by growing interest and architectural practices involved with alternative approaches to historical buildings (Plevoets & Cleempoel, 2012). As constant changes of buildings are the result of the rise and fall of political, cultural, social, and economic regimes, buildings as the society changes (Powell, 2005). The terms “Adaptive Reuse”, “Adaptation”, and “Reuse” which are often found in contemporary architectural discussions, describe the method of changing the use of redundant buildings by replacing functions and adapting values (Boonprasong, 2016). Thus, adaptive reuse is observed not directly but as having close relationships to

historical preservation due to the alteration of meanings, perceptions, and practices related to historical buildings. Accordingly, existing architectural studies have discussed this subject through many cases of various building types, scales, and design approaches. Some early examples are the ancient Greek and Roman temples that were turned into Christian churches, English monasteries recycled as country houses, Russian palaces that became post-Revolution museums, and 19<sup>th</sup> century American mills and railway stations turned into shopping malls and hotels (Powell, 2005). Further, the new functions and designs readapted in old buildings also explain the necessity of public venues for social gatherings, ranging from a single place to towns, cities, and states. The social impact of reuse goes much deeper with the continuation of buildings to a place (Richard L. Austin, 1987).

### 2.2.1 Five Strategies for Reading Old Buildings with New Forms

The current literature on adaptive reuse has examined a wide range of building types, scales and design approaches. Recently, the book *“Old Buildings New Forms: New Directions in Architectural Transformation”* by architect Françoise Astorg Bollack contributed five strategies for examining the combination of old and new architecture. These are “insertion”, “parasites”, “wraps”, “juxtapositions”, and “weavings” (Bollack, 2013)



Figure 2. 5 Five strategies about old buildings with new forms (Bollack, 2013).



## 1. Insertions

Firstly, the addition of new piece, space or building into the older volume using the existing structure as protection and nestling is known as “insertion”. The architect illustrates this approach as thinking of a peg being inserted in a hole or wedge being pushed between two edges. So, the resulting object depends on both parts: the wedge gives the hole structural stability while the wedges keep both edges apart. In this case, the inserted piece is described as the new, that contains its own identity and own new world, in which the essence of the new world is heightened by the experience of its relationship to the old. On the other hand, the existing part, defined as the container that carries memories and emotions, while the insertion provides “the new” through new uses, new sensibilities or new relevance to the existing structure (Bollack, 2013).

Several case studies are analyzed as the approach of “insertions”. In general, all cases enhance the historical value of the existing buildings by maintaining the overall structural system as the prior fulfillment. Therefore, cases in this category mostly used the existing building façades while the additions are achieved mainly internally. Although less effort is paid on the exterior, several internal insertions can be observed through the given structural condition to apply different lighting strategies such as the adding of courtyard, skylight and screen design. Some cases also explain the building materials including textures and colors as important aspects to express the contexts and emotions of old and new.

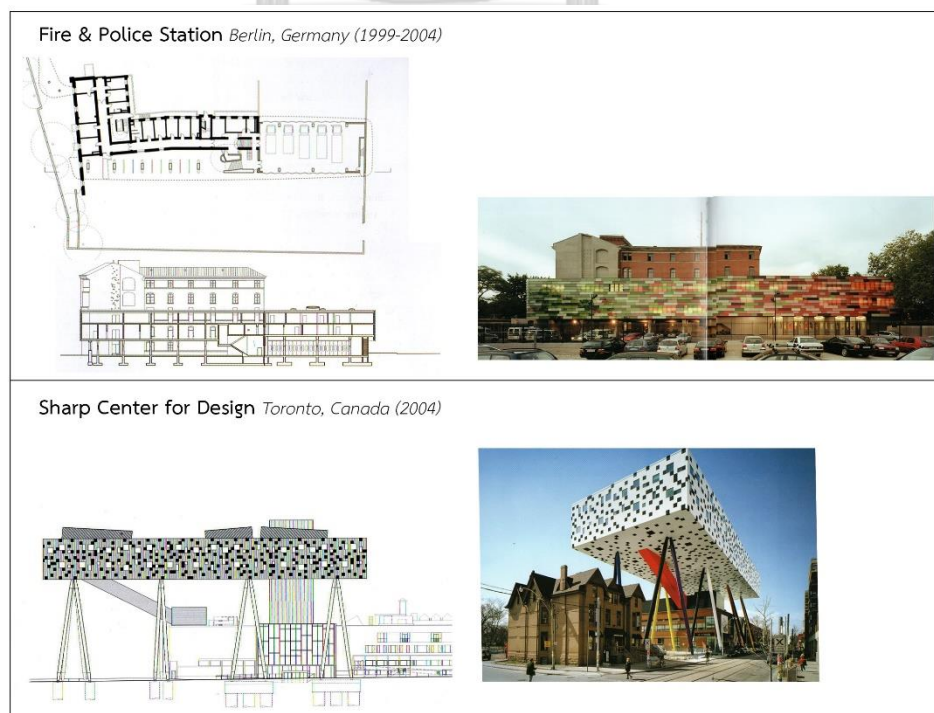


Figure 2. 6 Case studies of “Insertions”.

## 2. Parasites

Second, “parasites” is an approach explains a new attachment to a site or the top of the original building, which creates mutual dependence. It is explained as a scientific term that is, an organism, known as parasite that benefits at the expense of the other, namely host. In this case, the new addition depends on the original structures, where they provide key functions especially structural support, access, and ready-made integration in an existing historical, cultural fabrics and infrastructures (Bollack, 2013). “Parasites” is described as an economical approach because new addition makes good use of the structural support from the host. Hence, the addition of this type cannot function without the support of original building.

Further, in terms of architectural expression, the parasite is easily readable because of its distinct architectural expression on the host, in terms of form, materials and colors. Some cases are more outstanding when the manipulation of scales, massing and placement come into play as well (Bollack, 2013). Compared to “insertions”, the case studies present in this category are more and varied of building types, scales, and new usages. The architectural outcomes are diverse when different structural systems of the original buildings inspired alternative designs in terms of functions, structural elements, circulation, form and façade design.



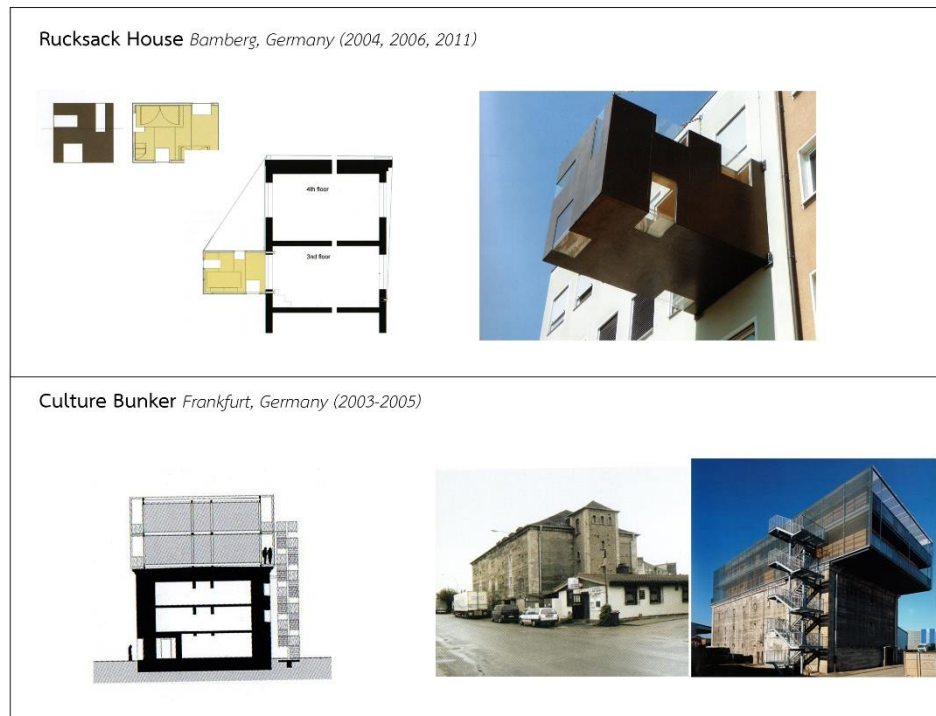


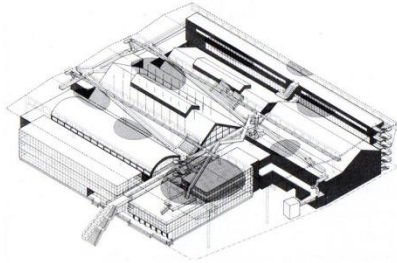
Figure 2. 7 Case studies of “Parasites”.

### 3. Wraps

Next, old structures with an addition that creates an overhead umbrella as protection are defined as “wraps”. These are intended to protect the old structure and to present them in a new way by incorporating them into a different whole (Bollack, 2013). This strategy is challenging in structural aspects especially the existing roof and wall structural systems.

Among the cases shown in Françoise’s analysis, the application of new roof to “cover” the original buildings are resulted by different reasons. For example, Bernard Tschumi explained the outcome of “wrap” in his project, Le Fresnoy National Studio for Contemporary Art was lied on the structural weakness of the original buildings and his careful consideration of expenses and time. Then, he proposed a “big roof” solution to protect the original buildings while the underneath’s in-between spaces are reprogrammed for new uses. On the other hand, smaller scale projects such as House on Bunny Lane and Wolfahrt-Laymann House applied this strategy with the aim to improve the spatial connection of existing scattered structures. New roof and wall structures are applied as the new envelope to assemble the old and new pieces.

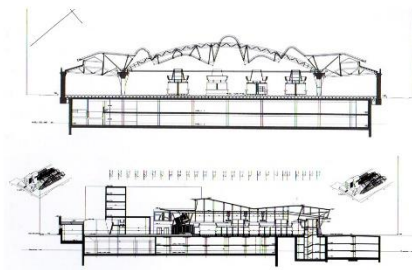
Le Fresnoy National Studio for Contemporary Art *Le Fresnoy, France (1991-1997)*



House on Bunny Lane *Bernardsville, New Jersey (2001)*



Santa Caterina Market *Barcelona, Spain (1997-2005)*



Wohlfahrt-Laymann House *Frankfurt, Germany (2004-2006)*

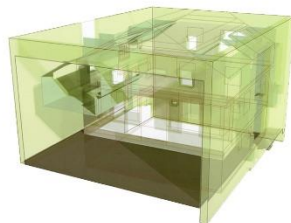


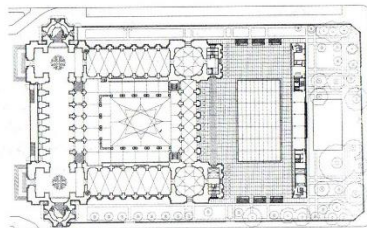
Figure 2. 8 Case studies of “Wraps”.

#### 4. Juxtapositions

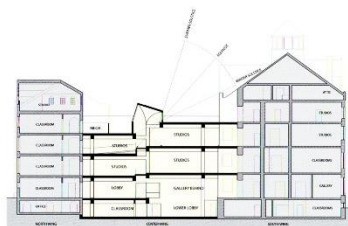
Furthermore, “juxtapositions” is used to define new additions are positioned beside an old structure but with a different architectural style. Cases in this category show “respect” of the new to the old, where the original elements remain fully legible, and there is, no blurring of boundaries, no transfer of architectural elements and no architectural “call and response” (Bollack, 2013). The new addition is integrated into the functional pattern of the combined works but it presents as an outcome of quietness and with distance. Further, this strategy shows visual separation by a combination of distinct style, different materials, contrasting colors and textures as well as volumetric abstraction.

In this book, most projects present its relationship to the original building by standing aside and offering a contrast that enhance the old buildings. Françoise described the new attachment as a “silent partner”, where interesting outcome of old and new is created by its quietness, to respond to the original building while the new object sits apart, and seemingly undemanding.

**Musee Des Beaux-Arts Lilli, France (1990-1997)**



**Higgins Hall, Pratt Institute Brooklyn, New York (2005)**



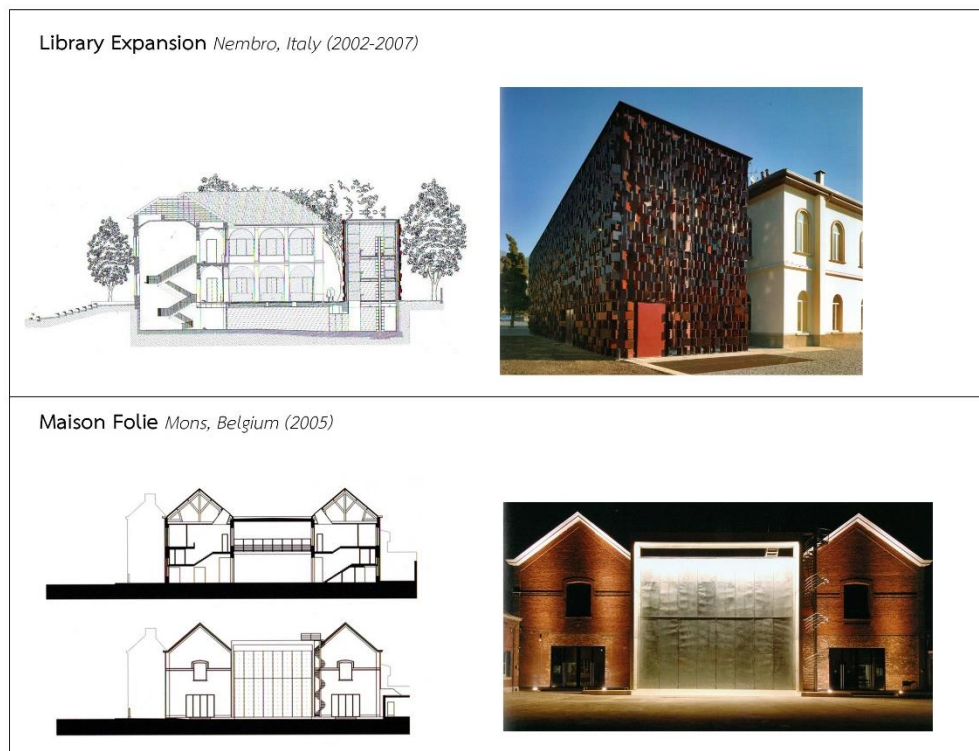


Figure 2. 9 Case studies of “Juxtapositions”.

## 5. Weavings

Lastly, “weavings” is an approach where the new work is woven in and out of the original building fabric. It is recognized as the most complex strategy among all because it includes the edit works on the existing structure, leaving some intact, foregrounding some features, and underplaying or eliminating others while working the new elements over and into the existing fabric (Bollack, 2013).

This strategy is signified by the architects’ appreciation of ruins. For examples, all cases shown in this book presents the reuse strategy on ancient buildings that were destroyed during war periods as well as the redundant industrial spaces. The consideration on structural aspects are more challenging when rebuilt, reconstruction or renovation of original structures come as major tasks before the new is added (Bollack, 2013). Therefore, Francoise described “weaving” as a strategy where architects restate the rules of the game as they work with different methods, edit, assemble and more importantly construct new contexts for the work to be seen (Bollack, 2013).

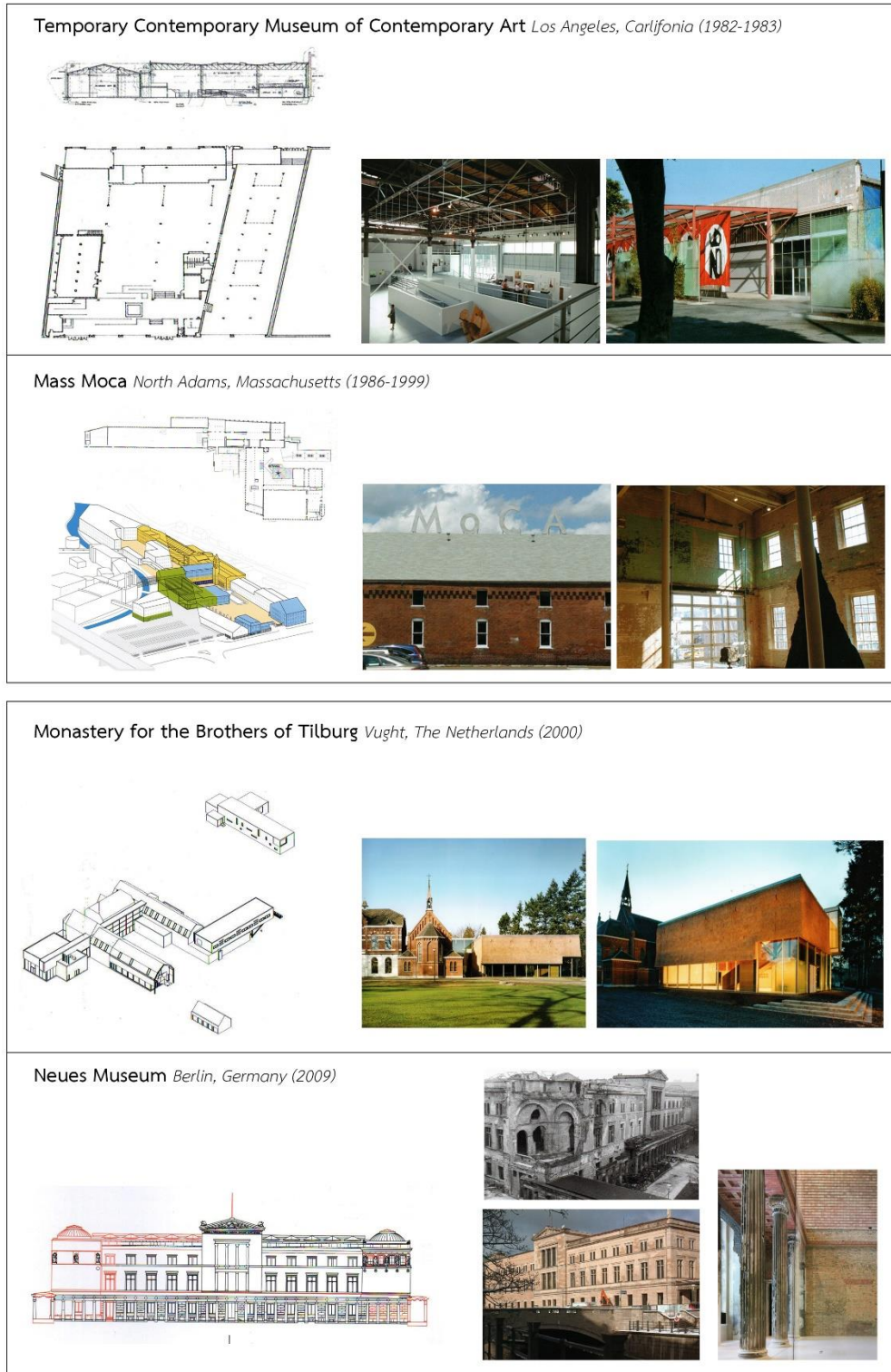


Figure 2. 10 Case studies of “Weavings”.



In sum, the clear definitions with case studies in this book have contributed the alternative references in reading new designs in old buildings or old compounds. Although It is not a design guideline, the classification through the author's comparative studies have provided the extensive insights and perceptions which the future studies can be extended.

There are several important points can be summarized through the comparisons between these five strategies. First, structural aspect, which discussed firstly in each strategy is taken as the most crucial part in the combined works of old and new buildings. Although without further descriptions about the criteria and regulation in examining the original structures, Francoise's explanation of each strategies through the differentiations of practicing structures on both existing and new parts shows it as the prior consideration to integrate new design. This further explains the consideration of structural systems of each strategy are resulted from different degree. For example, the strategies of "wraps" and "weavings" show more analysis and consideration on the existing structures because both strategies involve more exterior aspects or even the whole existing buildings.

Although case studies are equally categorized in each strategies, specific steps and regulations in all categories are hardly be told because they demonstrate different ideas, concepts and intentions from the architects. For instance, several terms such as surrounding communities, neighborhood, urban fabric, social patterns are mentioned in the analysis, in which the design outcome of combining old and new also resulted by the context of the existing buildings.

Therefore, in response to the existing structures and context, the ideas of practicing adaptive reuse are further enriched by different design approaches, preferences on building style, planning, form, layout as well as the selection of building materials, colors and textures.

### 2.2.2 Adaptive Reuse in Thailand

In Thailand, existing studies on adaptive reuse or new designs in old compounds also include various building types, including traditional domestic buildings, Thai houses, and more recently, old warehouses and shophouses. The current literature examines adaptive reuse from the perspective of conservation through chronical studies and analysis of building adaptation in the Thai context (Boonprasong, 2016). Besides that, there are also studies of adaptive reuse of traditional Thai houses that examine embedding adaptive qualities that facilitate physical and functional modifications (Ramasoot, 2013). Furthermore, increasing urban threats have also resulted in research on shophouses as a potential urban typology to apply adaptive reuse (Luangamornlert, 2015). The analysis focuses on architectural, physical, and spatial aspects as the criteria and requirements to accommodate change.

Thus, current research studies of adaptive reuse in Thailand have taken both historical and technical approaches. In this thesis, adaptive reuse is applied as a design approach that responds to both historical accounts and contemporary issues in Tio Chew Cemetery. The research fills the gap by not only proposing new functions and programs in the old buildings, but also suggesting combined new additions and adaptive reuse as possibilities and opportunities for the cemetery. The proposal of an elderly center was determined through analysis of the users of Tio Chew Cemetery, which existing studies are lacking. Hence, it is an alternative approach that responds to the history, present issues and needs.

### 2.3 Design for Aging Societies

The following research discusses design for aging societies in accordance with the proposal in this thesis for an elderly center.

Studies on design for aging societies have gradually increased based on the rise of population aging globally. Existing architectural studies span a wide range of research

in relation to environmental studies, landscape design, elderly housing development, facilities, and design accessibility.

The current literature on this topic is new, and many research studies have focused on centers and homes for the elderly. In Thailand, research includes other building types such as Buddhist temples and multipurpose centers which have analyzed as the elderly's favorite places for leisure and social activities. Architectural analysis is conducted based on field observations, surveys, interviews, and case studies to produce suggestions and recommendations. In addition, universal design also studies design guidelines and references for aging societies.

Further, some studies have explored planning and design strategies that support the concept of "aging in place", a term defined as "remaining living in the community, with some level of independence, rather than in residential care" (Wiles et al., 2011). The research understands this concept in terms of functional, symbolic, and emotional attachments to the analysis of homes, neighborhoods and communities. Therefore, current research studies present multigenerational communities or models of areas with older and younger residents as alternative ideas to traditional housing for the elderly. The discussion of "co-housing", and "multigenerational living" has gradually gained attention as alternative typology for aging societies. These are important in urban scale neighborhoods as they can foster mutual support between generations and increase the sense of community (Epimakhova, 2016).

This thesis proposes an elderly center which is differ from the conventional type of elderly centers as day care or housing typologies. But an alternative design approach to suit the context and contemporary needs in Tio Chew Cemetery, that currently used as recreation purpose. Therefore, the following research studies further discuss the aspect about aging in relation to the needs of open space, which is close to the context of Tio Chew Cemetery. Later, the research proceeds with the understanding of universal design in terms of accessibility and mobility.

### 2.3.1 The Needs of Open Space for the Elderly

Before discussing universal design, the subject on the needs of open space for the elderly is studied to understand the importance of open spaces and physical activities for the elderly. It is also to explain Tio Chew Cemetery serves as an elderly-friendly context and suitable to propose an elderly center.

Current research study entitled “*Placemaking for an Aging Population: Guidelines for Senior-friendly Parks*”, presented by UCLA Luskin School of Public Affairs addresses open space design as one important aspect in design for aging societies. The study derives three aspects from gerontology and explains in relation to park design. They are biological, psychological and social aspects (Loukaitou-Sideris et al., 2014) (see Figure 2.11).

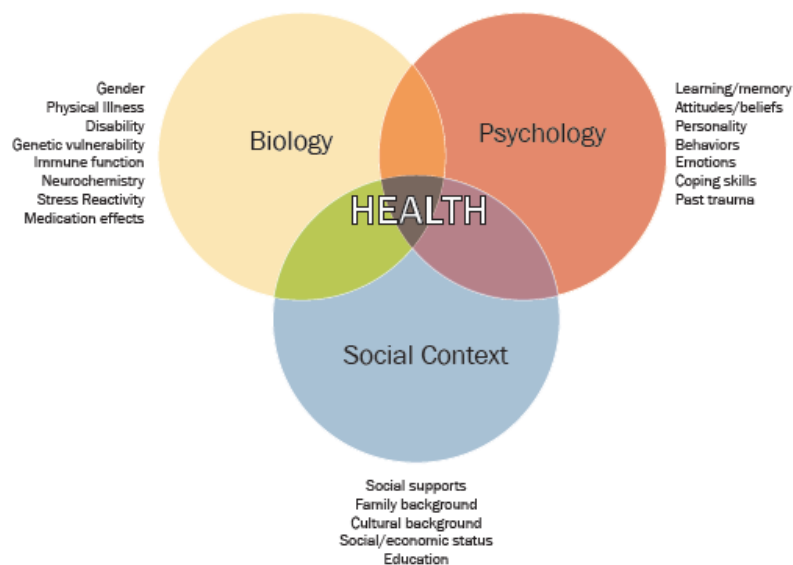


Figure 2. 11 The biopsychosocial model of health in relation to gerontology study.

Firstly, biological aspect is explained in relation to “aging in place”. The increasing health issues of elderly is stated as the challenge of this preference. As stated, open space and the positive influence that it can have on elders’ health may help elders continue to “age in place.” (Design, 2007). For example, neighborhood open spaces are claimed as ideal “places of aging” that influence the well-being and quality of life of elderly.

Second, study explained choice is an important psychological need for elders. It means the elders' motivations and negotiations of their preferences activities. The choice explains whether the elders may maintain resilience to cope with psychological needs by adapting to the environment. For instance, the fear of falling becomes the elders' realization of their physical stability. Hence, understanding the preference of open space planning with adequate physical activities help to create better "places of aging" and can fulfil the elders' "choices" to be independent.

Next, in terms of social aspect, open spaces or parks are indicated as not just for physical exercise, but important as social venue. Research studies found that some elders perceive open spaces as gathering spaces, also referred to by some researchers as "third places" or "bumping places". One researcher referred to the social aspects of open spaces and parks as "natural neighborhood network" (Design, 2007). Therefore, open space design also important to provide all kinds of sport amenities, physical activities and programs to foster social interaction.

#### 2.3.1.1 Design Guidelines for Senior-friendly Park

From the three aspects drawn from gerontology study, the research also includes cases studies and different perspectives from elderly and agencies to understand the needs of open space for the elderly. Thus, the research concludes the findings by suggesting ten aspects as the guidelines for elderly's open space design.

##### 1. Control

Control refers to persons' real or perceived ability to determine what they do, to affect their situation, and to determine what others do to them. A sense of control can be related to orientation, where users in parks can clear in way-findings.

##### 2. Choice

Choice means the provision of a variety of places to wander, a variety of things to look at and a variety of activities and programs for both active and passive recreation.

### 3. Safety and Security

An ideal open space design for elderly is important where the condition of being protected can enhance the elders' sense of security from being injured or attacked.

### 4. Accessibility

The ability to access to the open space conveniently, safely, quickly, and without impediment influences individuals' decision to visit it.

### 5. Social support

Social support means the helps and cares that ready to serve those in needs.

### 6. Physical Activities

The provision of appropriate settings for active recreation and walking such as fitness amenities, sport facilities and seating.

### 7. Privacy

An ideal open space design requires adequate planning to provide some level of privacy, tranquility and quietness to the users.

### 8. Contact with nature

Parks bring nature into the city and can offer their visitors positive “natural distractions,” defined as “environmental features that promote an improved emotional state in the perceiver, may block worrisome thoughts, and foster beneficial changes in physiological systems (Design, 2007).

### 9. Comfort

The provision of both physical and psychological comfort such as designing an environmental-friendly context, climatic responsive design, public-friendly amenities etc.

## 10. Aesthetic and sensory delight

Parks should offer an aesthetic respite in the city and an opportunity for sensory enjoyment.

Although the design scope in this thesis includes only a building design without proposing a master plan or park design. This guideline is relevant to Tio Chew Cemetery in terms of its context as an open space, similar function as recreation use, and more importantly surrounded by old communities with different aged groups. In sum, Tio Chew Cemetery is perceived to fulfill certain aspects as stated above. This gives better understanding on external design aspects that relate and affect a new building design.

### 2.3.2 Universal Design

Universal Design, defined as the design and composition of an environment so that it can be accessed, understood and used to the greatest extent possible by all people, regardless of their age, size, ability or disability (Carr et al., 2013). Studies have recognized a key concept of universal design is to provide accessibility without stigmatization by integrating accessibility features. Specific to elderly, applying universal design allows individual to continue daily living independently because safer environment are provided for daily functioning and navigation (Carr et al., 2013)

Given a wide range of design aspects in universal design, from external to internal, the following research focuses mainly on aspects and requirements that related to the context of Tio Chew Cemetery, which is about accessibility and mobility.

#### 2.3.2.1 Design for Access and Mobility

Based on German standards DIN 18025 in 1992, regards to design specifications for all types of housing construction, the planning requirements for barrier-free spaces includes horizontal access, vertical access, and fittings as important aspects for access and mobility (Fischer & Meuser, 2009).

### 1. Horizontal Access

First, in terms of passageway and corridors, the spaces for movement must be at least 120 centimeters wide for passage within the building while 150 centimeters wide between walls outside the building.

Second, outdoor flooring must be slip-resistant, wheelchair-accessible and firm.

### 2. Vertical Access

The planning requirement for vertical access includes lifts, ramps and stairs. First, the provision of lifts is important for wheelchair users. Thus, adequate dimensions to accommodate wheelchair and the companion is important. The clear door width of 90 centimeters is required with control panels and handrails.

Second, in terms of stairs, the spaces for movement must be a minimum of 150 centimeters wide without curve. In addition, the thread must be identified with tactile material. A change to the surface texture of the treads, corridors and landings make sufficiently safe for the users. Also, handrail must provide in a height of 85 centimeters with a diameter of 3 to 4 centimeters fitted in both sides.

Third, ramps or access without steps also important for certain spaces that have levels changed. As stated, when the longitudinal gradient reaches three percent, ramps are compulsory. Besides, the spaces for movement must be at least 150 x 150 centimeters at the start and end of the ramp while 120 centimeters wide between the wheel deflectors on the ramp. Further, a height of 85 centimeters with handrail of 3 to 4 centimeters in diameter should be fitted to both sides of the ramp and half-landing.

### 3. Water Closet

For water closet, the space for movement to the left or right of the toilet bowl must be at least 95 centimeters wide and 70 centimeters deep. On one side of the toilet bowl, allowance must be made for a distance of at least 30 centimeters to the wall and other fittings. Further, the seating height of the toilet bowl, including the seat must be 48 centimeters.



## 2.4 Summary

In sum, the overview of cemeteries addresses urban threats on historic sites. The rising awareness of cultural, identity, and historical are shown through the reactions of the public and descendants who consider cemeteries as sites of collective memories. In this thesis, Tio Chew Chinese Cemetery, which is currently used as a recreation area, is presented as an alternative use and unique urban phenomena that is worth discussing in terms of historical background, as well as physical developments of the cemetery and historical buildings.

On the other hand, the reviews on both adaptive reuse, new designs in old compound and design for elderly served as the design references in the second half of this thesis. First, the understanding of adaptive reuse and new designs in old compound is the primary design reference associating to the design of a new building in the Tio Chew Cemetery. Whereas the studies of design for aging societies helps to understand the requirements and ideas of architectural design for elderly.

Before the discussion of the elderly center, the next chapters discuss three case studies in topics of both adaptive reuse or new designs in old compound as well as design for the elderly.

## CHAPTER 3

## CASE STUDIES OF ADAPTIVE REUSE &amp; DESIGN FOR AGING SOCIETIES

In this chapter, three case studies are selected as design references based on two categories. The first two cases are about adaptive reuse or new designs in old compounds. They are selected because adaptive reuse is applied on old Chinese buildings that surrounded by old communities, which close to the site context of Tio Chew Cemetery that contains old Chinese buildings and surrounded by communities. Five strategies of adding old buildings with new forms is used as design framework and to understand contemporary practices on old Chinese buildings.

On the other hand, a project about the design for the elderly is presented as the last case study. It is chosen based on its fulfillment of design requirements for the elderly both internally and externally.

## 3.1 Ruralation Shen'aoli Library, Tonglu, China



Figure 3. 1 Ruralation Shen'aoli Library, Tonglu, China, 2015. (云夕深澳里书局桐庐, 2015)

Located in Zhe Jiang Province of China, a traditional house named Jing Song Tang, 景松堂 in Shen'an li ancient village, has been transformed to a library by a China-based architect, Zhang Lei from AGL Architects. *Jing Song Tang* was built in late Qing Dynasty and served as a residence for six families over centuries (马海依 & 王铠, 2016). Due to its gradual dilapidating condition, new life was given through the architect's combined practice of reusing, readapting and recycling.

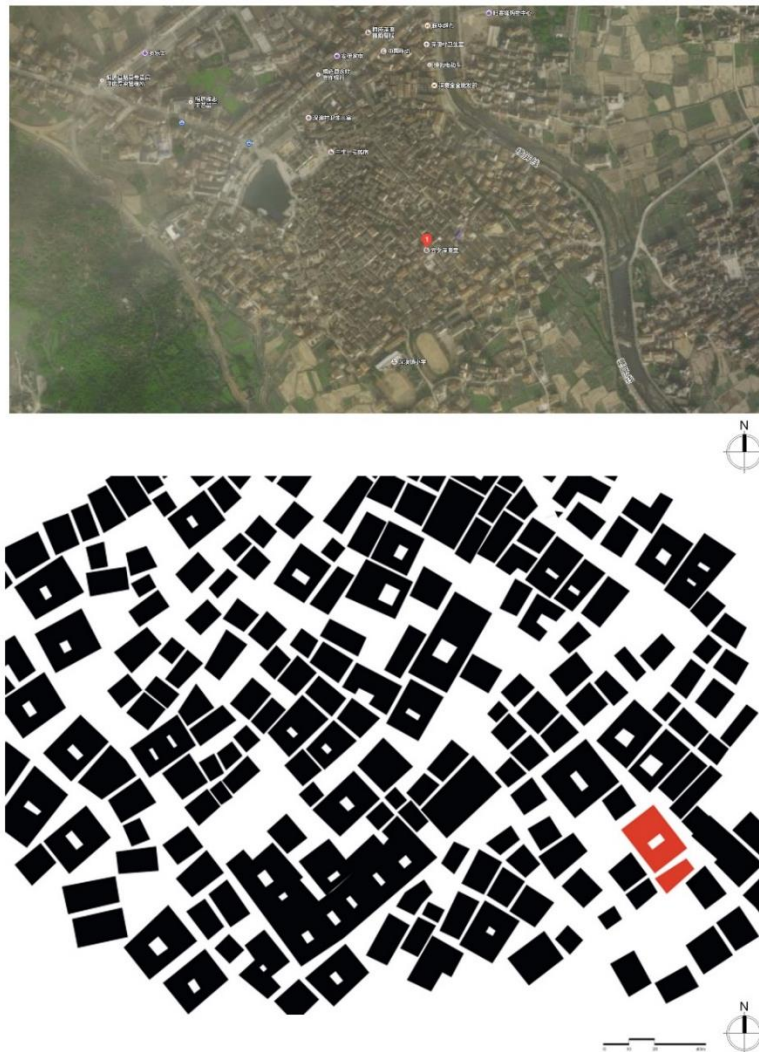


Figure 3. 2 Location of Ruralation Shen'aoli Library in Tonglu, China.

By “responding to the site” as the main task and taking design intention as the objective, the architect attempted to maintain the existing structures and appearance both internally and externally. Hence, the idea and importance of first “respect”, then “design” was perceived by the architect as the design intention for this project (马

海依 & 王铠, 2016). From domestic use to public use, this double-storey house was re-planned for new uses without changing the division of space. This can be seen through the rooms on the upper floor, which were re-divided into reading and discussion rooms. However, the ground floor is mainly serves as the non-enclosed reading areas (see Figure 3.3 & 3.4)



Figure 3. 3 The external appearance of Ruralation Shen'aoli Library before adaptive reuse (云夕深澳里书局桐庐, 2015).



Figure 3. 4 The internal appearance of Ruralation Shen'aoli Library during the preliminary construction stage (云夕深澳里书局桐庐, 2015).

Accordingly, the space planning also signified by the addition of a new building adjacent to the existing house. Initially, the outdoor area of the house mainly served an area for keeping livestock. Pebbles, which were the original material of the pig farm, were recycled and reused for the external wall in the new two-storey structure. They were painted white to create a juxtaposition with the old house. Further, a gallery with a transparent appearance was added to link the old house to the new structure, successfully giving a sense of curiosity to visitors to the old house (马海依 & 王铠, 2016).

In fact, the idea of “respect then design” is not only about space planning. Despite the new structure, the original primary structure including columns and beams, was maintained with careful insertions of new partitions, staircases and openings and maintenance of old timber partitions as much as possible. The design is also concerned with details, so the existing stoves were left and painted white for use as decorations whereas other items such as sewing machine and bamboo woven products were collected for display in the library (马海依 & 王铠, 2016).

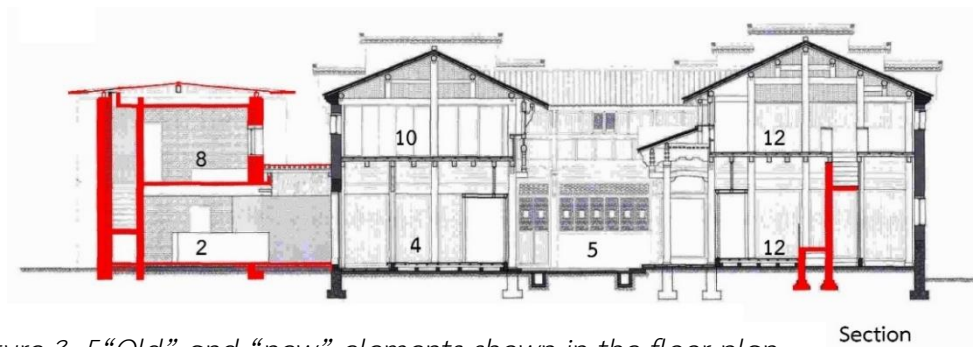


Figure 3.5 “Old” and “new” elements shown in the floor plan.



Figure 3.6 “Old” and “new” elements shown in the section view (马海依 & 王铠, 2016)

Nevertheless, the action of “respect” is demonstrated through intangible aspects by several accounts, which the architect stated as the most challenging part of the project. Firstly, the architect respected and responded to the context through discussion and integration with local builders and carpenters. Next, respect was shown when the owners refused to remove the old timber panels that were used as room dividers due traditional beliefs. Acceptance and trust between both sides was gradually achieved after the owners slowly began to understand and saw the outcomes of the changes (马海依 & 王铠, 2016).

Therefore, both tangible and intangible aspects had surprising outcomes for the village, when these adaptations and reuse plans improved community activities of the villagers.

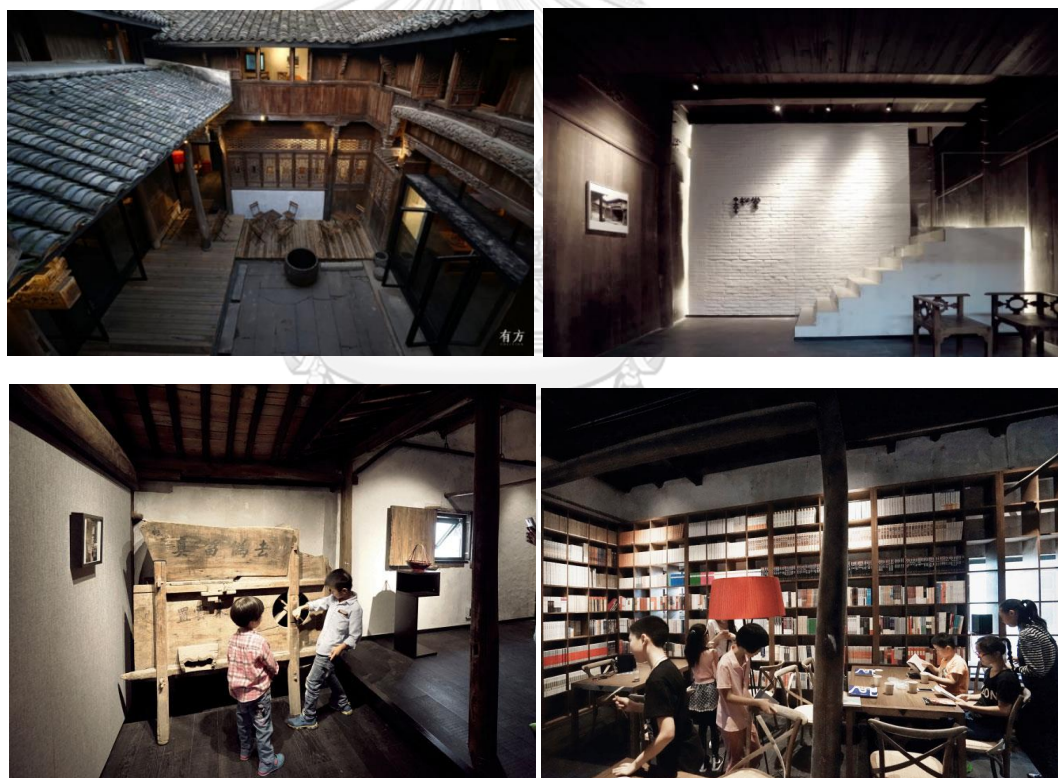


Figure 3. 7 The outcome of adaptive reuse in Ruralation Shen’aoli Library (云夕深 澳里书局桐庐, 2015).

In sum, based on Francoise’s five strategies of old buildings new forms, the case of Ruralation Shen’aoli Library demonstrates the strategy of “weavings” because it involves the reconstruction of original buildings as well as inserting new addition.

With the architect's intention of respect then design, an outcome of "old" and "new" was achieved through the careful maintenance of old structures combined with the insertion of a new structure, materials and functions. In achieving this, the new building was designed by giving dialogue and "respect" to the adjacent old building in accordance to the building height, the roof profile, color scheme and room scales. Both tangible and intangible aspects contributed to a design outcome that links the past, present, and future.

### 3.2 Qi Men Black Tea House, Anhui, China

The next case study presented here is Qi Men Black Tea House, which has a similar intention of adding a new design to an old compound but takes a different design approach and intervention as the previous case.

Qi Men Black Tea House is in Tao Yuan Village, Shanli town of Anhui Province, China. The adaptive reuse project converted a 60 square meters old house to a tea house, which was designed by SU Architects.



Figure 3. 8 Qi Men Black Tea House in Anhui, China in 2017.

Surrounded by mountains, farmland, and valleys, Tao Yuan Village is embraced by a natural backdrop. It was formed by hundreds of families with the surname Chen during the *Song* Dynasty. The village is signified by the presence of nine ancestral halls, which is rarely seen in a village. Further, due to the customs and climatic conditions,

Anhui Province, including Tao Yuan village has been famous for the production of Black tea since 1915 (魏唐辰希, 2018).

Qi Men Black Tea House belongs to a Chen family. Positioned on the side of a small alley, the house is adjacent to one of the nine ancestral halls and is surrounded by farmland. This double-storey building was originally used as tea plantation tool storage. However, the gradual dilapidation of the building led to its reuse and re-adaptation.

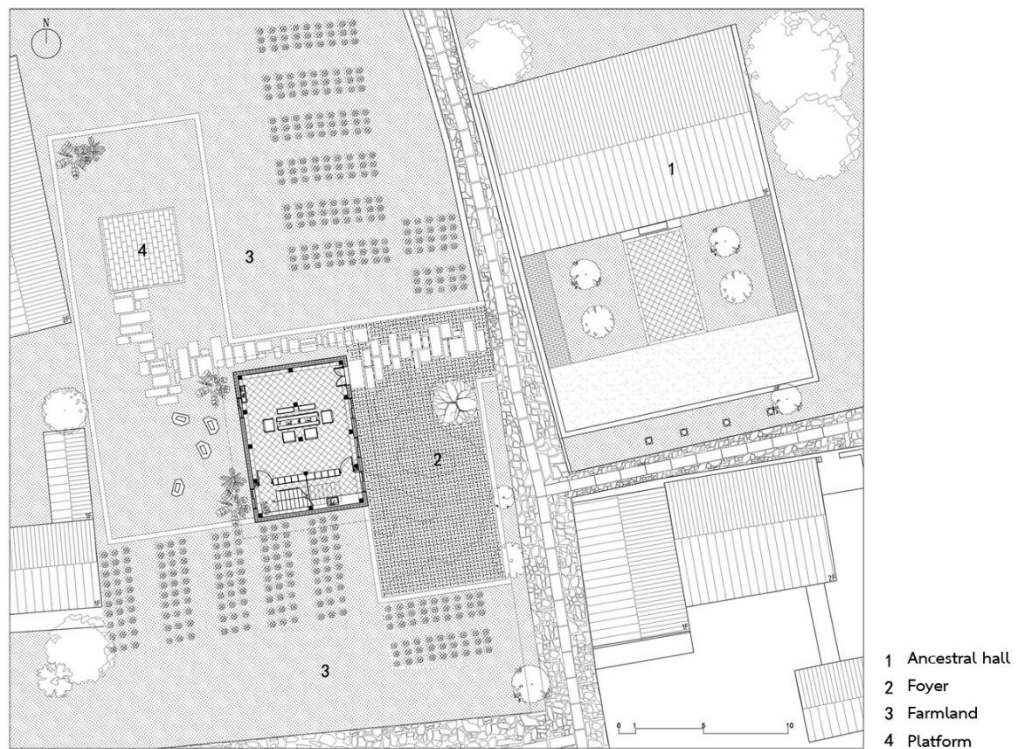


Figure 3. 9 Positioned on the side of a small alley, the house is adjacent to one of the nine ancestral halls and is surrounded by farmland (Source: Archdaily).

By responding to the black tea culture in the village, the architect re-planned the house as a new venue for a black tea experience museum, which serves as a platform to sell, share, and taste village-made products. Further, the daily habits of chit-chatting and leisure activities, mostly at the corners of alleys inspired the architect to provide a user-friendly place with tea culture as the design intention.



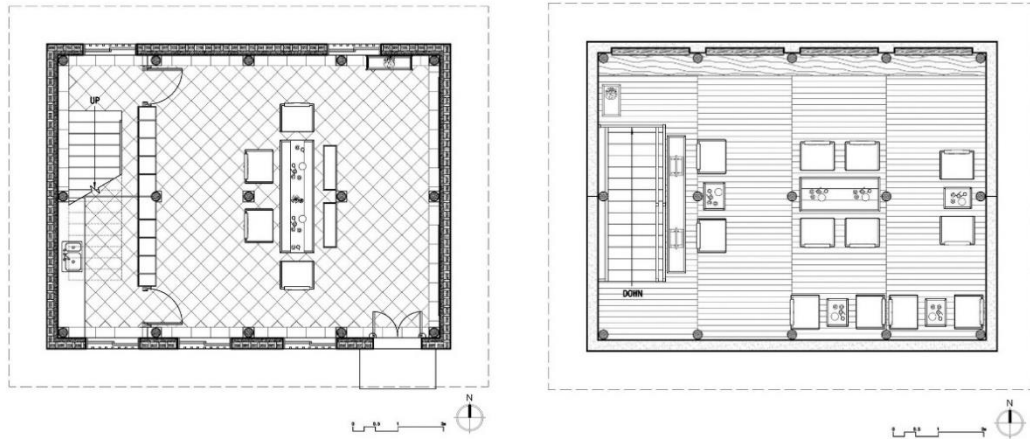
Seeing the sense of aging projected in this old house, the architect decided to maintain some important building elements such as the hollow-bond brick walls and the timber-grilled windows and doors. On the other hand, due to weakening of the supports of the brick walls after long-term use, together with the independent load-bearing system of the wall and columns, the brick walls were kept as the building envelope with new reinforcement added at the internal walls. As a result, new structural systems were constructed. An interesting architectural outcome resulted when the traditional column-and-tie construction method was used and the creative imitation of roof trusses as tree branches juxtaposed natural elements with the building.



Figure 3. 10 Qi Men Black Tea House in different construction stages (魏唐辰希, 2018).

Spaces were eventually formed through the first intention of structural re-planning. The ground floor which has a dim atmosphere, was turned into a tea testing space, which is a space for static and quiet activity. However, the upper floor was turned into an active space through the new structural system. This is because the gaps between the old walls and the roof have provide new experiences to users

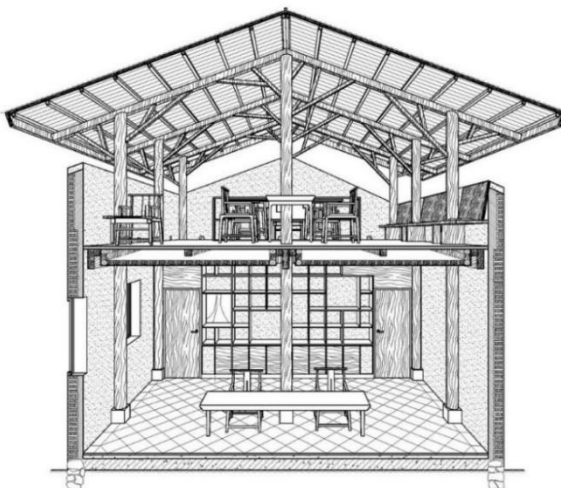
through views of the adjacent buildings and nature. This eventually allows interactions between inside and outside.



Ground Floor Plan



Second Floor Plan



วิทยาลัย  
IVERSITY

Figure 3. 11 Ground floor and second floor of Qi Men Black Tea House (Source: Archdaily) (Above).

Figure 3. 12 The gaps between the old walls and the roof provide new experiences to users through the views of the adjacent buildings and nature (Source: Archdaily) (Below).



Figure 3. 13 The outcomes of adaptive reuse in Qi Men Black Tea House (Source: Archdaily).

In summary, Qi Men Black Tea House presents the strategy of “insertion” as the reuse involves in a single structure where architectural alterations are mainly focused internally. It is a different outcome of adaptive reuse, which is clearly shown through the new roof design. With the maintenance of the existing hollow brick walls, doors and windows, the insertion of the new roof was an outstanding creative design that imitates natural elements. Further, the roof produces a unique effect when the surrounding context, including the natural landscape and the adjacent ancestral halls, are captured by the opening on the upper floor. This presents another approach of responding and respecting the context. It demonstrates how physical architectural aspects can be adapted in the current context through contemporary design practices.

### 3.3 EHPAD Vigny-Musset, Grenoble, France.

Located in the city of Grenoble in France, Etablissement d'Hébergement pour Personnes Agées Dépendantes (EHPAD), is a residence for the elderly who need dependent care.

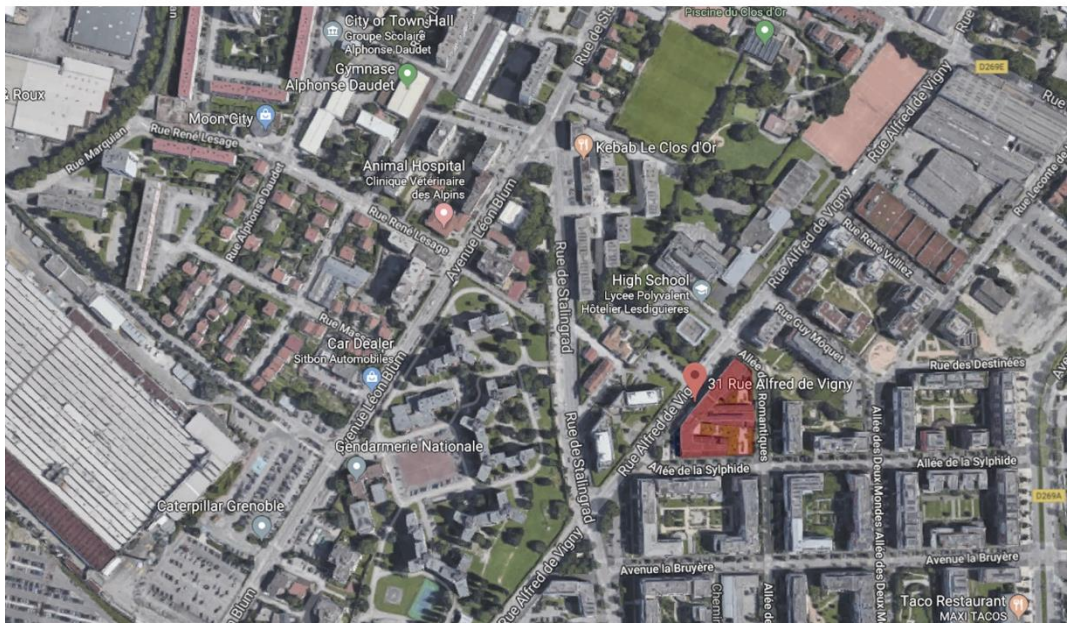


Figure 3. 14 EHPAD Vigny-Musset, Grenoble in France.

#### Building Orientation

Located along the East side of Rue Alfred de Vigny, this residence for the elderly is located on a trapezoidal lot with total area of 3700 square meters. The complex is formed by three building blocks that link to form an E-shaped layout. In terms of building orientation, it has two facets: to the west, the continuous frontage and greenery from adjacent buildings are aligned with this building and offer a degree of protection from noise pollution (Wang, 2013). However, the east side which faces towards residential zones, is where the three wings ends and become integrated with gardens. Further, the building also responds to the sun orientation with the minimum

exposure of building facades to the East and West. This provides better thermal comfort to the occupants, the elderly in particular.



*Figure 3. 15 The integration of two gardens between the three building blocks in EHPAD Vigny-Musset, Grenoble, France.*

### Gardens

Next, a significant feature regarding the building orientation refers to two gardens located between the three wings of the accommodation units, giving an exterior and interior quality to the space of the complex. Furthermore, the external pedestrian walkways, which are bordered by parking lots and another green layer present a walkable, safe, and environmentally friendly access.

### Spatial Layout

In terms of spaces, this two-storey structure is separated with shared spaces and facilities mainly on the ground floor and accommodation on the upper floor. The second floor has a large area in which the overhangs form sheltered galleries beneath the facades facing the garden at the ground floor. Furthermore, all spaces are arranged on both sides for the amounts of openings and double load corridors, which are used

for circulation in the linear organization of the layout. In each building block, external staircases face the gardens, allowing secondary access through the gardens, which fosters the use of outdoor gardens.



Ground Floor Plan



First Floor Plan



Figure 3. 16 The ground floor is mainly occupied by shared spaces and facilities while the accommodation is on the upper floor.

### Materials and Colors

The overall structure is formed by different material and a combined construction system. Reinforced concrete is used as the floor material for seismic stability, intermediate metal floors are applied for the overhangs, and wood is used for the outer frames, sun-shading devices and roof trusses.

The combination of construction systems also presents the color aspect of the building both externally and internally. The exterior has a contrasting color scheme formed by the black metal wall finish on the second floor, while the wood framing and green from the garden successfully harmonize on the exterior. However, the interior has a series of warm color, with yellow, orange, and brown colors applied to internal walls, partitions, and built-in furniture.

### Universal Design Aspects

Moreover, the important aspects of accessibility and safety as universal design are also achieved in this building. The provision of handles along corridors and on doors, sufficient space for movement, and user-friendly built-in furniture are found in this building.



Figure 3. 17 The interior of EHPAD Vigny-Musset in Grenoble, France.

Overall, EHPAD Vigny-Musset in Grenoble is an ideal center for the elderly based on its fulfilment of overall design requirements for elderly. In terms of the exterior, the building with three blocks is planned adequately with considerations of sun orientation, acoustic control, and green spaces. For the interior aspects, the application of colors, building materials, furniture, and more importantly, accessibility requirements present an elderly-friendly living environment.

The above three case studies have presented the alternative design approach that is focused on designing a new building in an old compound for adaptive reuse based on the selected site with a rich historical context. The understanding of design for the elderly acts as the next step to fulfil the requirement for the target users, the elderly in Tio Chew Cemetery Park.

Before the discussion of the design of new elderly center in Tio Chew Cemetery, the next chapters discuss the historical background of Tio Chew Association of Thailand, the physical development of Tio Chew Cemetery and the historical buildings as the primary research in this thesis.



## CHAPTER 4

### CHINESE ASSOCIATION IN THAILAND

#### 4.1 Chinese in Thailand

The history of Chinese in Thailand has often been discussed based on Chinese diasporic conditions and the roles they played in Thai society. Most of the research studies have presented through the analysis of Chinese long-term coexistence and their social integration in the host society. William J. Skinner's work, particularly *Chinese Society in Thailand: An Analytical History, 1957* has widely been referred based on his thorough analytical approach in the discussion of assimilation. The presence of population statistics, few historical maps and photos in his book have contributed further research studies in different fields, especially centered with the subjects of assimilation, acculturation and adaptation.

Most historical accounts indicate Chinese immigration in Thailand happened since Chakri Dynasty, on the banks of the Chao Phraya River in 1782 (Chua, 2014). Based on historical records, several waves of Chinese immigration took place due to the increasing demand for labor and trading opportunities in Siam. The year of 1782 also stated that Chinese settlement was shifted due to the construction of royal compound in Rattanakosin Island. Consequently, the relocated area became commercial hub and later developed as an important entrepot of internal, coastal and foreign trade, namely Sampheng District (Aasen, 1998). Hence, Sampheng is signified as the old quarter of Bangkok, occupied by Chinese Communities until today.

#### 4.2 The Role of Chinese in the Development of Bangkok

By the 1900s, the second great influx of Chinese in Siam caused an expansion of the migrant workforce in the development of Bangkok's infrastructure, including cutting canals, building roads and railways, and constructing commercial buildings along new thoroughfares. As described by William J. Skinner:

“Before 1890 and 1910 Bangkok changed from a city on water to one on land. New roads were constructed in the capital, as well as thousands of new shop-homes, Western styled residences and government buildings. Hundreds of Chinese construction firms were formed to do the jobs, each with dozens of apprentice-laborers. The construction business was largely in Cantonese hands, but certain Teochius (transliterated as “Tio Chew” in this thesis) firms also played an important part. By 1910, several thousand Chinese workers in Bangkok were engaged in construction of one kind to another.”

The involvement of Chinese in the early city’s infrastructure and construction works also give the historical meaning and cultural significance to Chinese architecture in Thailand. First, shophouses which built to serve both commercial and living spaces are important urban typology that addresses the business activities, daily and community life of Chinese in the city. Existing studies have paid attention to the aspects of architectural significances, building layouts and structural elements to explain the social and historical values. Secondly, Chinese courtyard houses which signified as Chinese domestic architecture also presented as a state of wealth associated to Chinese mainly as merchants during the past. Most of the cases in Thailand are analysed in comparison with cases in China, aiming to trace the architectural uniqueness with the origins, cultures, traditions in their motherland and their architectural adaptation in this foreign land. Furthermore, Chinese Shrines which serve multifunction for worships, festivals and gatherings, are stated as the “root” of Chinese settlements and important as Chinese community life (Coughlin, 1960). Similar with the Chinese domestic type, Chinese Shrines also analysed with social, cultural and tradition aspects as the historical importance and architectural significance.

#### 4.3 Social Structure of Chinese in Thailand

Chinese migrants mostly came from the treaty ports on the Southern China. They are categorized within five language groups including Tio Chew 潮州, Cantonese 广东, Hainanese 海南, Hakka 客家 and Hokkien 福建, as well as clans, trade guilds, and secret societies. Historical accounts state that the differences of language

groups formed the segregation of Chinese migrants' groups, in which each locked in their own language and trade-specific communities (Chua, 2014). On the other hand, Chinese secret societies were introduced to Siam to secure protection and economic advantage. However, the complex structures of the societies have caused political and social problems. As Skinner described the social structure of Chinese communities in Siam during the late 19<sup>th</sup> century was ill-defined, unstructured and classification based on status and prestige (William, 1957).

#### 4.4 Chinese Association in Thailand

Further, Skinner's analysis on the Chinese society in Thailand states that Chinese association were established in relation to the Thai nationalism in the 1900s. A Chinese strike in 1910 has resulted the promulgation of the Nationality Act by the Thai government, which marked the turning point of Chinese society in Thailand. One notable development was the decline of Chinese secret societies to legitimate functions by newly established Chinese associations (William, 1957) This indicates that Chinese associations signified their positions by encouraging mutual aid and services such as co-operation among heterogeneous linguistic and socio-economic groups and the provision of protection from hostile or competitive individuals and government (Coughlin, 1960). Chinese associations in Thailand are categorized into four types, namely Surname Associations, Dialect Associations, Business Associations, and Benevolence Associations.

Although they are part of the same category, each association is a distinct unit pursuing its own goals; however, taken in their totality, they direct the life of the Chinese community (Coughlin, 1960). All associations, no matter what their individual character, have mutual-aid functions, not only for their members but also for the public. One important feature of Chinese associations regarding architecture is the buildings established and owned by the associations. Normally, most associations own not just a single office building but other public buildings such as schools, shrines, hospitals, and cemeteries whose presence is a sign of Chinese involvement in public and welfare services. In fact, the establishment of these public buildings also had their

intention to maintain Chinese cultural identity in the host country in the past. For example, educational purposes were accomplished through Chinese schools, and religious purposes were accomplished through the presence of Chinese Shrines and the establishments of cemeteries for burial and funeral services. Indeed, these are taken as intangible form of social development. The construction of these buildings can also be described as a form of architectural development in Siam in the late 19<sup>th</sup> century.

#### 4.4.1 Tio Chew Association of Thailand

As discussed, all associations were established with their own visions and goals. Their developments and achievements differ based on the changing social conditions and circumstances. In this research, the selection of a Chinese dialect association, specifically, Tio Chew Association in Bangkok, was based on its development in both tangible and intangible ways. For example, as the largest Chinese dialect group in Thailand, Tio Chew Association of Thailand, is significant due to its large number of members and status, which is perceived as representative of Chinese who have assimilated in Thai society. Secondly, the continuation of Chinese cultural activities such as Chinese singing, dancing, drama, Chinese Chess, and *Tai Chi* activities reflects the role of Tio Chew Association in maintaining Chinese culture. The following research discusses the buildings established by Tio Chew Association to provide a broad view of its roles in architecture, which benefit later studies of Tio Chew Cemetery and existing buildings.

#### 4.4.2 The Establishment of Tio Chew Association of Thailand

Tio Chew Association was established in 1938. The 1937 Sino-Japanese war in China increased the burdens and social awareness of Chinese immigrants residing in foreign countries. This caused the Chinese community to be united and later establish the association (Tio Chew Association 30th Anniversary Commemorative Publication, 1968). Initially, the association was started in an office building on Phlapplachai Road. However, the office was forced to move when the government wanted to use it as a

police station in 1939. Consequently, the administration section of the association was temporary relocate to โรงเรียนเผยอิง, *Pei Ying Xue Xiao*, 培英学校 near to Song Wat Road, which belonged to Tio Chew descendants at that time (see Figure 4.1 & 4.2). The association later moved to Chan Road, Sathorn, which is the location of Tio Chew cemetery. A permanent office building was constructed in 1970.

#### 4.4.3 Roles and Vision of Tio Chew Association of Thailand

With a long existence of nearly 80 years, Tio Chew Association upholds the original vision to provide mutual-aid assistance as well as welfare and social services to the Chinese community and later to broader groups of people. The construction of educational buildings, clinics, and shrines are a tangible contribution while intangible services are relied on mutual help such as donations, promotion of cultural and sport activities, and co-operation or coordination with local government for the country's developments.

#### 4.4.4 Buildings of Tio Chew Association of Thailand

Tio Chew Cemetery existed before the establishment of the association. Initially, the huge plot of land was donated by a group of wealthy Tio Chew descendants for burial purpose together with the efforts of other charitable organizations. The cemetery was fully administered by Tio Chew Association from 1944 to the present.

On the other hand, โรงเรียนเผยอิง, *Pei Ying Xue Xiao*, 培英学校 has existed since 1920, and was the earliest educational building that belonged to Tio Chew descendants before the establishment of the association. It was used as a temporary office before the construction of a permanent association building in Chan Road, Sathorn. In 1940, the school was fully administered by Tio Chew Association. Due to the increasing size and wealth of its membership, the association has also owned another three secondary schools and kindergartens for decades. These are โรงเรียนโกศลวิทยา, *Pu Zhi Xue Xiao*, 普智学校 built in 1948; Ni Bo Zhong Xue 弥博中学 built in 1962; and โรงเรียนโกศลภัทรวิทย์, *Chao Zhou Zhong Xue*, 潮州中学 built in 2003. All schools are currently run with a Thai and Chinese as bilingual education system (Tio Chew Association 30th Anniversary Commemorative Publication, 1968)

Furthermore, with the realization of public health, the association opened a small medical clinic in 1950, which was well-equipped with full-time services (Coughlin, 1960) (see Figure 4.8). In 1995, a medical center was built adjacent to the association building on Chan Road, Sathorn. The medical center is currently managed by the government (see Figure 4.9). Lastly, the association also maintain two Chinese shrines, which are located in the old quarter of Bangkok.

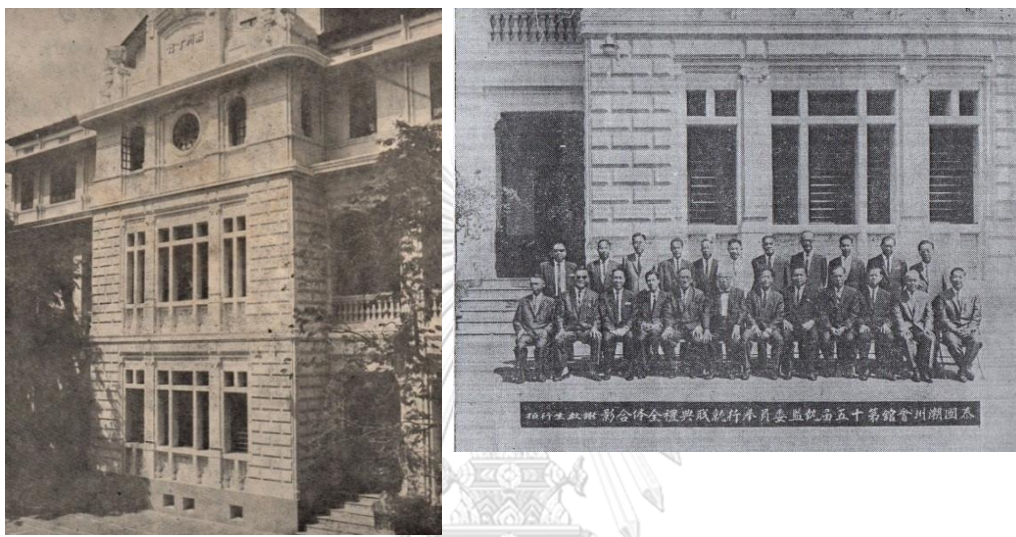


Figure 4. 1 โรงเรียนผยอิง, Pei Ying Xue Xiao, 培英学校 which was used as the temporary office of Tio Chew Association on Song Wat Road in 1940 (Left).

Figure 4. 2 Group photo of committee members of Tio Chew Association during the celebration of its 15th anniversary (Right).



Figure 4. 3 The entrance of Tio Chew Association of Thailand. (photo taken before 1968) (Left).

Figure 4. 4 The funerary ceremony happened in Tio Chew Cemetery. (photo taken before 1968) (Right).

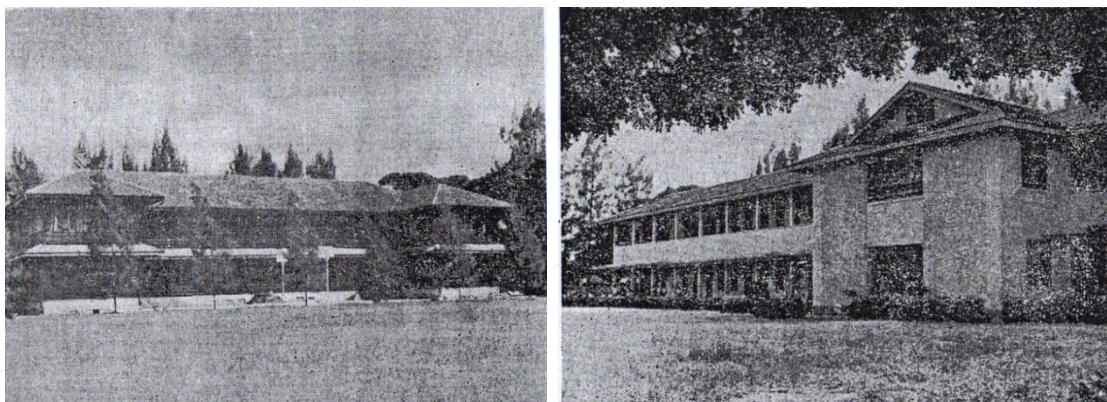


Figure 4. 5 The first building in โรงเรียนโกศลวิทยา, Pu Zhi Xue Xiao, 普智学校, 1948 (Left).

Figure 4. 6 The second building in โรงเรียนโกศลวิทยา, Pu Zhi Xue Xiao, 普智学校, 1952 (Right).



Figure 4. 7 The first building in Ni Bo Zhong Xue, 弥博中学, 1962.

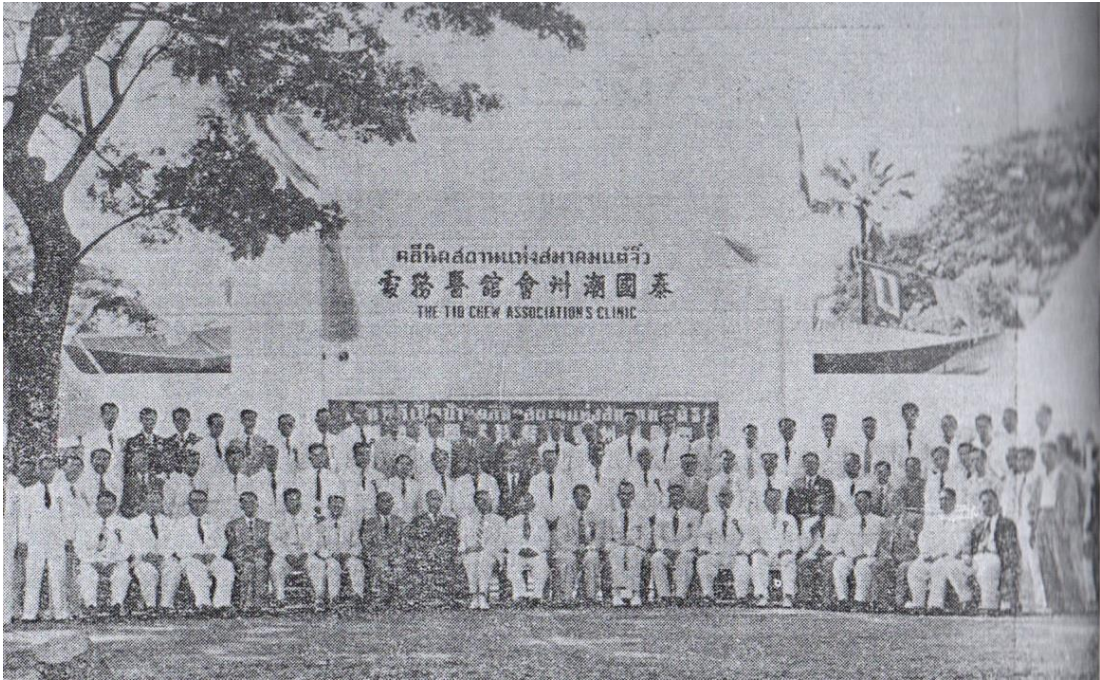


Figure 4. 8 The first medical clinic built in 1950.



Figure 4. 9 The second medical center built in 1996.



## CHAPTER 5

## TIO CHEW CEMETERY IN BANGKOK

Following the introduction of Tio Chew Association and contributions to Siam in the late 19<sup>th</sup> century, this research discusses the selection of Tio Chew Cemetery for further examination of historical development, both in the built environment and buildings. This is because the clear, defined boundary of the cemetery with several historical buildings is determined from the testimony of Tio Chew descendants in Bangkok, where both the cemetery and the buildings carry important historical and Chinese cultural meanings.

Typically, burial grounds for the dead are called graveyards, cemeteries or burial grounds. When the Chinese migrated to foreign countries, they called public cemeteries *Yi Shan* 義山. *Yi* “義” means charity or charitable while *Shan* “山” means hill. “*Yi Shan*” carries the meaning of voluntary and charitable service for Chinese descendants, who, in the past, were not able to manage to take the dead bodies back to their motherland (Loo, 2013). Tio Chew Cemetery, which has been named as “*Yi Shan Ting*”, 義山亭 since 1900, served as a burial ground for the poor to practice the Chinese traditional custom of burial in a foreign country (Tio Chew Association 30th Anniversary Commemorative Publication, 1968). This funeral service was initially founded by Poh Teck Tung Foundation, Hainan Chinese Association, and Tio Chew Association and was later fully administered by Tio Chew Association in 1944 until the present. These charitable services showed the vision and roles of Chinese associations in promoting welfare services and charitable activities (Tio Chew Association 30th Anniversary Commemorative Publication, 1968)

The historical and cultural meanings of Tio Chew Cemetery are undeniably important, especially in the developing urban context. First, the cemetery reveals the history of Chinese involvement in the city. Second, the cemetery serves as a record of the Chinese community and the early histories of Chinese organizations and social networks of Chinese communities. Further, the cemetery is a site to trace the roots of

ancestors and a place that presents a sense of belonging. In these ways, Tio Chew Cemetery has represented the diaspora condition and formation of collective memory for the Chinese community in Bangkok.

Furthermore, a major part of burial ground has been abandoned and serves minor function, except during the *Qing Meng* Festival, which is, according to traditional Chinese practice, the time when Chinese families visit graveyards to pay respect to their ancestors. The ritual performed during visits, usually involves the burning of incense and praying with the presentation of food to commemorate their ancestors (Loo, 2013). This is an important point to be addressed since, especially in the modern capital city, such practices are gradually disappearing to certain degree. While realizing the disappearance of traditional practice has a direct relationship to land use changes, this research extends the approach to examine the land use of the cemetery and buildings that represent the image of alteration.

## 5.1 Historical Development of Tio Chew Cemetery

Serving as a Chinese burial ground for almost 120 years, Tio Chew Cemetery is undeniably a historic site that has undergone different transformations and witnessed the development of the city of Bangkok. The following chapter outlines the development of the cemetery and introduces several important buildings within the cemetery compounds, which are discussed more deeply in the following research.

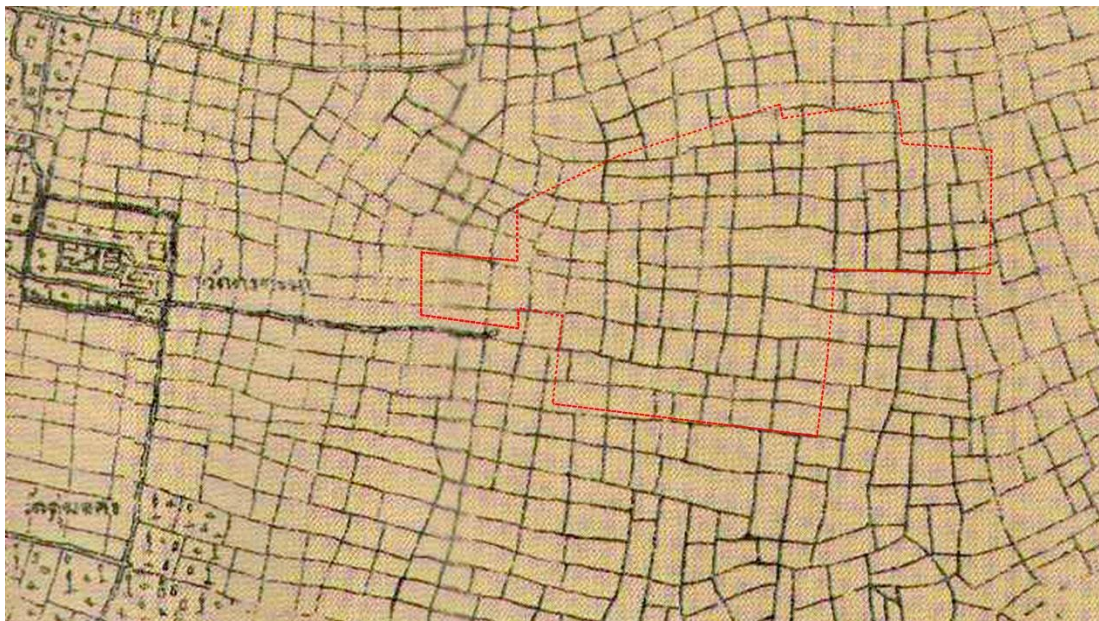
### 5.1.1 1890s - 1900s

The earliest historical records in Tio Chew Association's yearbook note that Tio Chew cemetery existed in 1899 and was officially opened for use as a burial ground in 1900. The opening of the cemetery originated from donations of public and individuals, especially wealthy Chinese merchants. The total area of the cemetery was originally 90 rais, approximately 144,000 square meters at Chan Road, Sathorn District in Bangkok.

The cemetery is located along the southern part of Sathorn Road, which branched from Charoen Krung Road to the east and connected to Rama IV Road. Originally, Tio Chew Cemetery was an agricultural area that was a paddy field back in

the 1890s (see Figure 5.1). Over 20 years, development resulted in the formation of more alleys branching from Charoen Krung Road and turned parts of the paddy field to other usages through the presence of more buildings along Charoen Krung Road, which gradually spread to the eastern part. Although no clear boundary indicates Tio Chew cemetery, a 1910 map of Bangkok stated the land use around the area as a Chinese cemetery, and showed a building linked from Charoen Krung 57 Road, which was Tio Chew Ancestral Hall, the first building within the cemetery (see Figure 5.2).

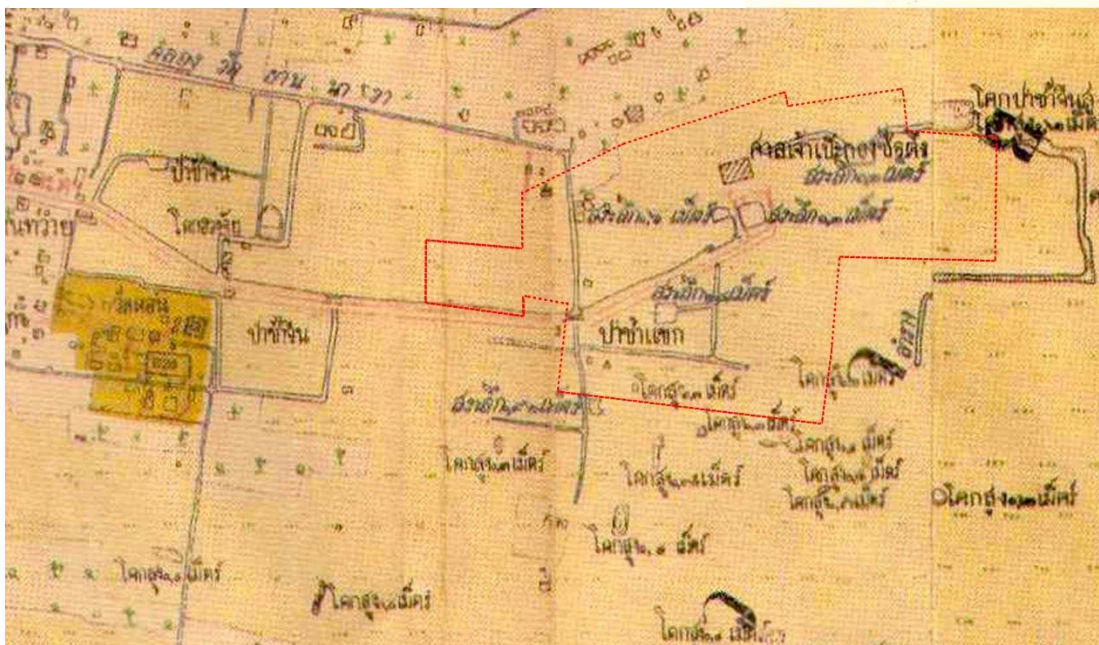




Present boundary of Tio Chew Cemetery overlay on 1896 map of Bangkok.

	อาคาร
	ถนน
	คลอง
	สวน
	โรงเรียน
	ตึก
	รถไฟ
	ทางหลวง
	สะพาน
	หอคอยน้ำ
	ลาน

Figure 5. 1 Tio Chew Cemetery in 1896 map of Bangkok.



Present boundary of Tio Chew Cemetery overlay on 1910 map of Bangkok.

	ตึก		สวน
	ถนน		คลอง
	โรงเรียน		ลาน
	รถไฟ		หอคอยน้ำ
	ทางหลวง		สะพาน
	หอคอยน้ำ		ลาน

Figure 5. 2 Tio Chew Cemetery in 1910 map of Bangkok.

## 5.1.2 1930s - 1940s



 Present boundary of Tio Chew Cemetery overlay on 1932 map of Bangkok.

Figure 5. 3 Tio Chew Cemetery in 1932 map of Bangkok.

In the 1930s, the construction of more inner roads and buildings along Charoen Krung Road was gradual. The land was gradually developed as a residential area through the presence of more timber and masonry structures surrounding the cemetery. In addition, the map indicates a Burmese cemetery and Javanese Muslim cemetery, indicating this area was also occupied by other ethnic groups and communities. This further explains the early settlements of different communities in the area and the importance of cemeteries during these early periods (see Figure 5.3).

In the 1940s, Tio Chew Cemetery, which was fully administered by Tio Chew Association beginning in 1944, was one of the important accounts marked in the history of Tio Chew Association. As historical records about the development of Tio Chew Cemetery are limited in the early years, the presence of Tio Chew Old Office of

Cemetery Affairs in 1933 and Tio Chew Cemetery Hall in 1936 indicate the buildings to support funerary services. In addition, Tio Chew Cemetery appeared more orderly with defined zones at this point.

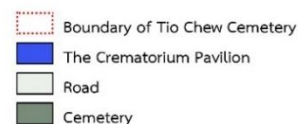
### 5.1.3 1950s - 1960s

Due to the city's development and the gradual expansion of the road system and buildings, the boundary of Tio Chew Cemetery appeared more obvious when the graveyard was surrounded by high-density development in the central city. The spatial organization of the cemetery was improved with pathways serving as divisions of different zones. Old buildings still stood with the addition of structures in the cemetery (see Figure 5.6).

In the 1960s, a permanent Crematorium Pavillion was built adjacent to Tio Chew Ancestral Hall and Tio Chew Cemetery Hall, with a lotus fountain beneath it. Previously, the land where the Crematorium Pavilion is located was used cremation ceremonies as it was perceived as an untouched area based on Chinese beliefs. Thus, the crematorium pavilion was built and enshrined with a *Dafeng Gong* god statue for commemorative purposes. In addition, an elaborate grave was built in the cemetery, which was used as a public grave to bury the deceased without ancestral families (see Figure 5.5).



Figure 5. 4 Diagram to explain the context due to the low resolution of the satellite map.



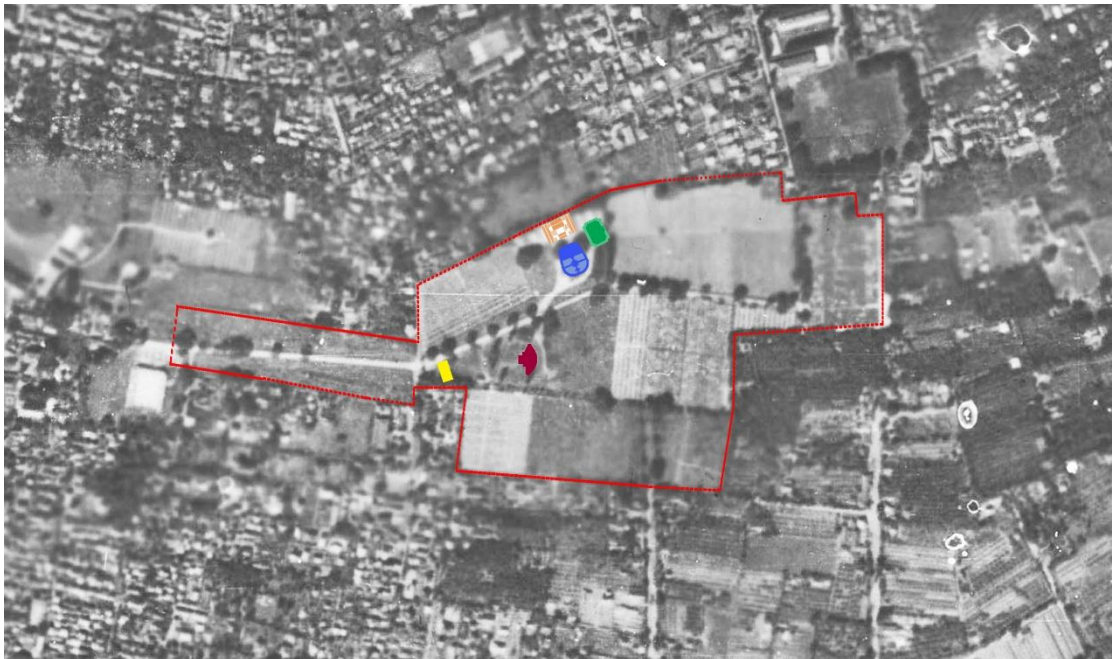
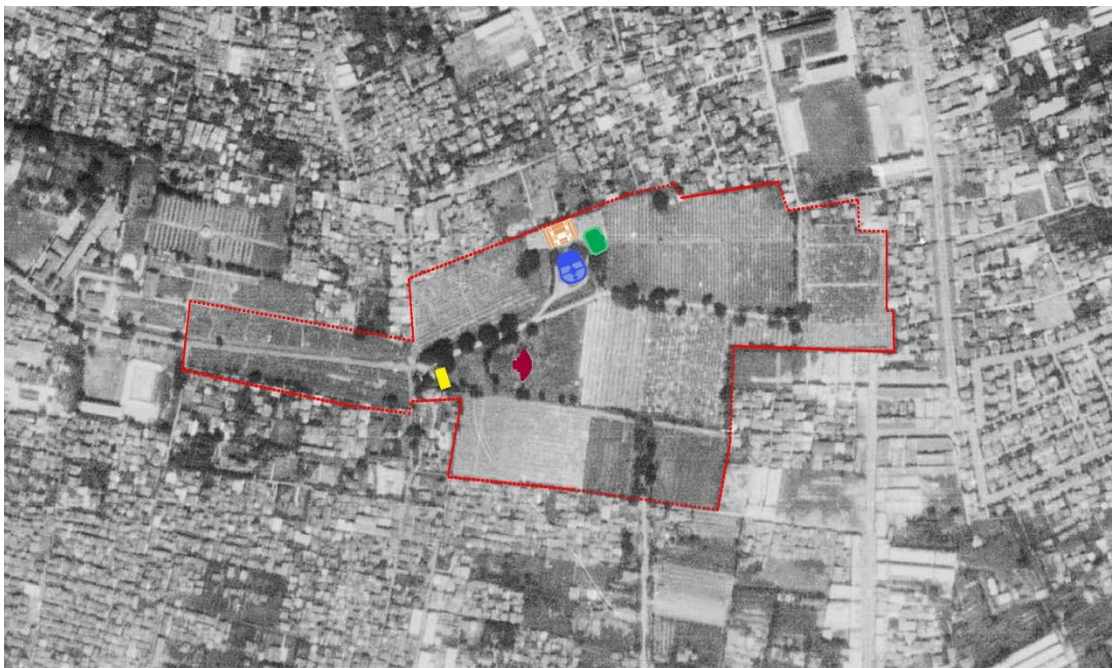


Figure 5. 6 Tio Chew Cemetery in 1952 map of Bangkok (Source of map: Royal Thai Survey Department).



- Tio Chew Ancestral Hall, 1901
- Tio Chew Old Office of Cemetery Affairs, 1933
- Tio Chew Cemetery Hall, 1936
- Crematorium Pavilion, 1960
- Elaborate Grave

Figure 5. 5 Tio Chew Cemetery in 1960 map of Bangkok (Source of map: Royal Thai Survey Department).

#### 5.1.4 1970s - 1980s

In the 1970s, a significant change in the cemetery compound was the construction of Tio Chew Association's new office building located to the South-east of the cemetery in 1970. Originally located at the **โรงเรียนผยออิง**, *Pei Ying Xue Xiao*, **培英学校** as a temporary office, the plan to build a new permanent office building for Tio Chew Association in the cemetery started in 1962 (Tio Chew Association 45th Anniversary Commemorative Publication, 1983) (see Figure 5.7).

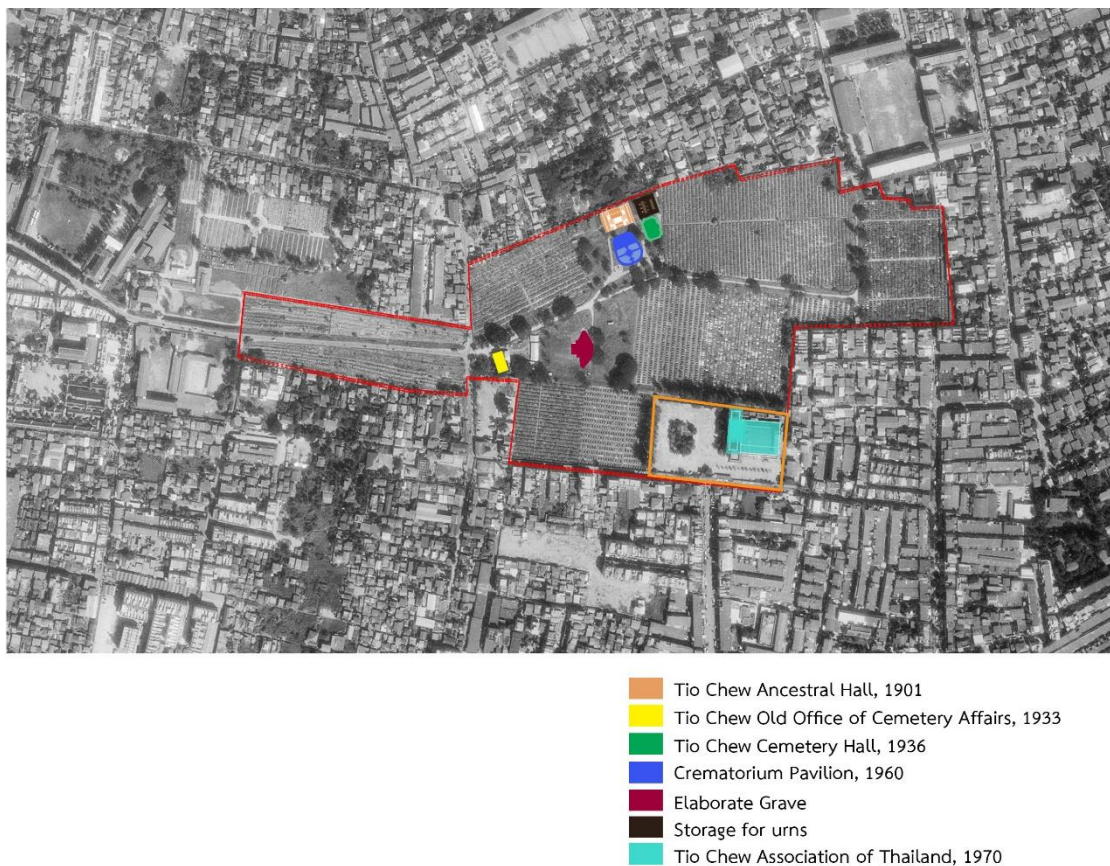


Figure 5. 7 Tio Chew Cemetery in 1973 map of Bangkok (Source of map: Royal Thai Survey Department).



### 5.1.5 1980s - 1990s

In the 1980s, the area surrounding Tio Chew Cemetery remained densely developed. The area was not only occupied by old timber houses, shophouses and detached houses but also mid-rise buildings that began to emerge, especially apartments.

In addition, a part of the graveyard in Tio Chew Cemetery was cleared and turned into a parking area for use by Tio Chew Association (see Figure 5.8). Urban development resulted in the demand for car parking area. This raised the issue of lack of open green spaces in this residential area, which resulted Tio Chew Cemetery later being turned into a recreation area.



- Tio Chew Ancestral Hall, 1901
- Tio Chew Old Office of Cemetery Affairs, 1933
- Tio Chew Cemetery Hall, 1936
- Crematorium Pavilion, 1960
- Elaborate Grave
- Storage for urns
- Tio Chew Association of Thailand, 1970

Figure 5. 8 Tio Chew Cemetery in 1990 map of Bangkok (Source of map: Royal Thai Survey Department).

### 5.1.6 1990s - present

The surrounding areas of the cemetery have remained densely developed over the years through the urban development. One significant change in Tio Chew Cemetery during 1990s was caused by the government's second phase of construction of Sirat Expressway in 1990 (Tio Chew Association 70th Anniversary Commemorative Publication, 2008). Consequently, some of the graveyards were relocated and cleared. The cemetery was divided into two parts, with the major graveyards on the east and other on the West. Further, the main entrance of the cemetery changed and opened to Soi Charoen Rat 3, which branched from Charoen Krung Road under the Sirat Expressway. Charoen Krung became the main road, easing accessibility to Tio Chew Cemetery (see Figure 5.9).

Within a few years of the road construction, a medical center known as the Medical Centre of Tio Chew Association of Thailand, or **泰国潮州会馆医疗中心**, was built in 1995. It is located beside the office building of Tio Chew Association and is currently administered by Sathorn District (Tio Chew Association 30th Anniversary Commemorative Publication, 1968).

In 1996, the cemetery was opened as public park by Tio Chew Association (see Figure 5.11). As mentioned, the opening of the cemetery was caused by two main reasons. First, it was due to the decision of Tio Chew Association to provide more walkability and better accessibility, especially for families' visits during the *Qing Ming* Festival. Second, requests from the residents in surrounding area to have a better jogging spot resulted in partially changing the cemetery to a public recreation area up to the present days (Tio Chew Association 70th Anniversary Commemorative Publication, 2008).

Tio Chew Cemetery became an important recreation spot where users play different kinds of sports. A gymnasium was built in 2004 (see Figure 5.10). From a burial ground to a recreation area, the changes to Tio Chew Cemetery show a unique urban phenomenon where the land use was improved with alternative uses.

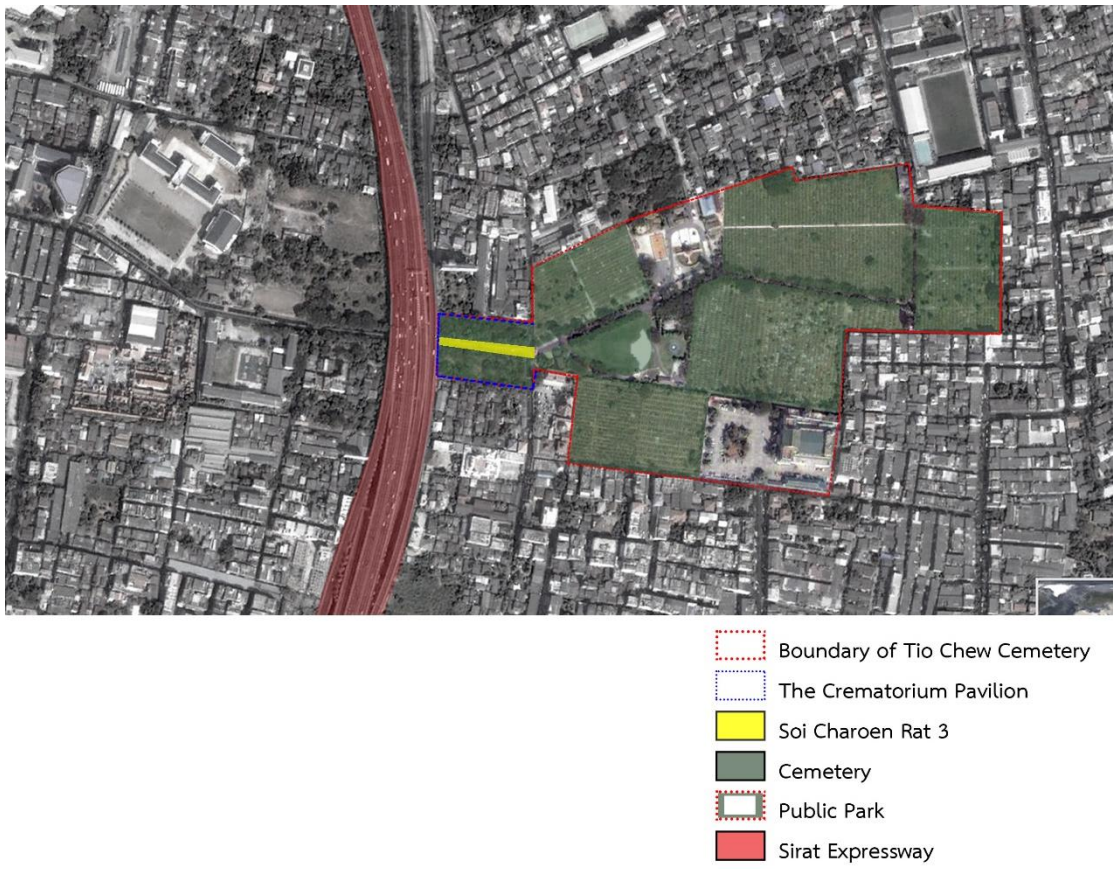


Figure 5. 9 Diagram to explain the context due to low resolution of the satellite map.



Figure 5. 11 Tio Chew Cemetery in 2003 map of Bangkok (Source of map: Google Earth).



- Tio Chew Ancestral Hall, 1901
- Tio Chew Old Office of Cemetery Affairs, 1933
- Tio Chew Cemetery Hall, 1936
- Crematorium Pavilion, 1960
- Elaborate Grave
- Storage for urns
- Tio Chew Association of Thailand, 1970
- Tio Chew Fitness Center, 2014

Figure 5. 10 Tio Chew Cemetery in 2017 map of Bangkok (Source of map: Google Earth).

## 5.2 Buildings and Structures in Tio Chew Cemetery

Rarely seen in the modern urban spaces, Tio Chew Cemetery is an ensemble of Chinese Architecture with several funerary structures that support the functions of the cemetery. In fact, all the buildings were built in different periods and serve different functions for funeral services, so the buildings have varied styles. However, one may still feel as if they are entering a Chinese world due to the presence of certain Chinese elements such as typical Chinese style buildings, inscriptions, signage, memorials, monuments and the colors used throughout the cemetery.

Although all buildings are varied in style and appearance, they embrace Chinese values in terms of physical and non-physical aspects. As the available archival study materials on architectural accounts are very limited, architectural analysis of certain buildings incorporates ideas and cases from China in the context of Thailand.

### 5.2.1 Tio Chew Ancestral Hall 潮州公祠

The most prominent building within the cemetery compound is probably Tio Chew Ancestral Hall, 潮州公祠 due to its Chinese architectural features. Built in 1901, this ancestral hall is recorded as the first building in the cemetery. Based on records, a renovation was completed in 2011 to refresh the 100-years-old building that gradually had become worn down. Therefore, there are few references regarding the original appearance and architecture, especially after the massive renovation. Accordingly, the following building analysis was conducted from the author's observations of the current building appearance with references to cases of Tio Chew descendants in China.



Figure 5. 12 Location of Tio Chew Ancestral Hall.



Figure 5. 13 Tio Chew Ancestral Hall in 2017 (Left).

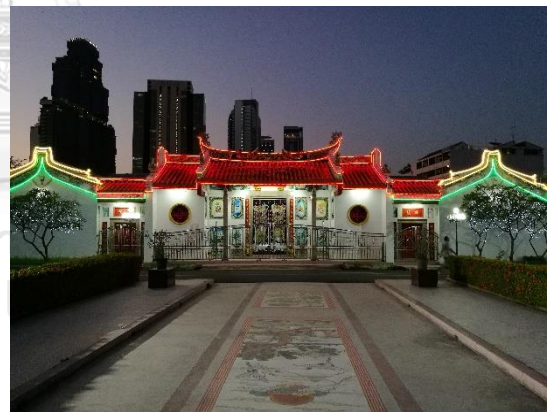


Figure 5. 14 Tio Chew Ancestral Hall in 2017, night view (Right).

Tio Chew Ancestral Hall is located at the central north of Tio Chew Cemetery, neighboring a few buildings, including Tio Chew Cemetery Hall, the Crematorium Pavilion and storage for urns.

Firstly, according to Tio Chew descendants in the *Chao Shan, Guang Dong Province of China*, the symmetrical building layout of ancestral hall is famous due to

its recognition as “*Si Tiam Kim*”, “*Four Golden Points*”, or “**四点金**”. The four elevation profiles have a similar figure with the word “gold”, or “**金**” as a significant feature (林凯龙, 2013) (see Figure 5.15). Normally, this building type has a square or rectangular footprint, with four units that form a central courtyard (see Figure 5.17). The central court is the most important space because it serves as the main ancestral hall in which ancestral altars were placed for worship. Thus, the central space is always larger than the adjacent spaces. Traditionally, the ancestral hall is a social place for the Chinese community. Activities such as meetings, family gatherings, and even punishment were carried out in the ancestral hall. In contrast, the other rooms are mostly used for documentation or storage of important documents such as ancestral records. However, in the present, Tio Chew Ancestral Hall is usually closed to the public except during important Chinese festivals. It is maintained with ancestral altars without other social activities.

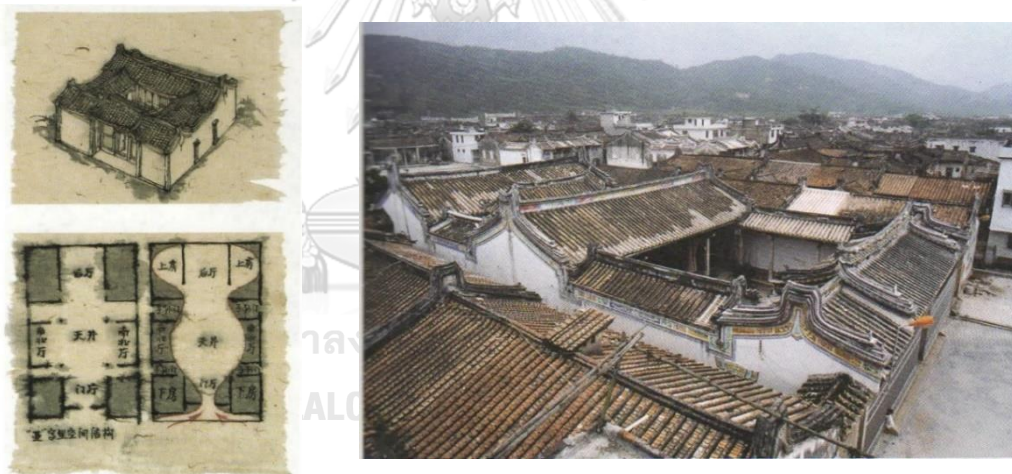


Figure 5. 15 The building layout of Ancestral Hall in Chao Shan, with a Chinese building layout of “four golden points”, or “**四点金**”(林凯龙, 2013).

Further, the functions of the central courtyard are signified with its natural lighting and ventilation. In Tio Chew Ancestral Hall, in addition to a central courtyard, there are another four secondary courtyards with all the rooms opening towards the courtyards (see Figure 5.16). Therefore, the internal corridors between courtyards and internal rooms are not just for circulation, but the spaces also prevent direct sunlight and rain from entering. Unfortunately, the central courtyard of Tio Chew Ancestral Hall

is unable to serve these functions nowadays because it has been covered with a new roof (see Figure 5.18).

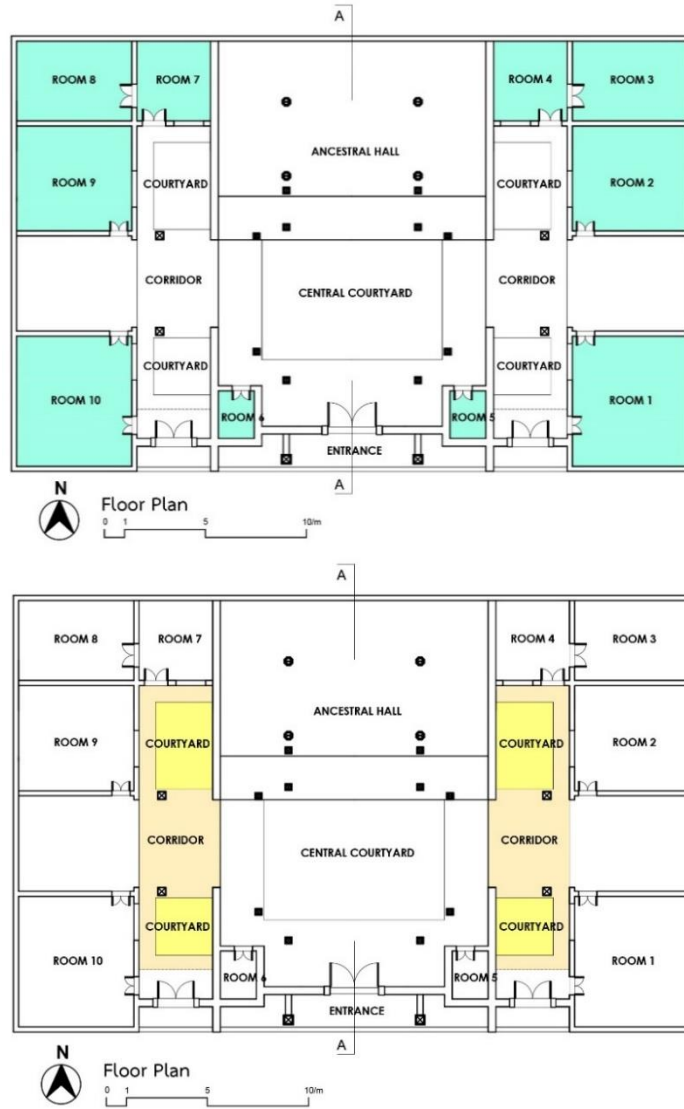


Figure 5. 17 The building layout of Tio Chew Ancestral Hall with a building layout of “four golden points”, or “四点金” (Above).

Figure 5. 16 The courtyards in Tio Chew Ancestral Hall (Middle).

Figure 5. 18 The central secondary courtyards in Tio Chew Ancestral Hall (Below).



On the other hand, Tio Chew Ancestral Hall is also signified by the traditional timber structural system. Wooden timbers, in the form of large, trimmed logs, are used as load-bearing columns and lateral beams for building framings and roof supports. The beams are connected to each other by brackets, with a joinery system known as *Dougong* that uses few nails and little glues. In Tio Chew Ancestral Hall, four octagonal forms comprised of timber are raised on stone pedestals in the main hall and appear as the most outstanding vertical structural elements (see Figure 5.19). However, the other columns in the courtyards are simpler square forms but have stone pedestals and different colors, and craftsmanship. They are the outcome of renovation. Further, Chinese features are present on the beams and joints through the craftsmanship of myriad Chinese forms, from mythology to operatic scenes.

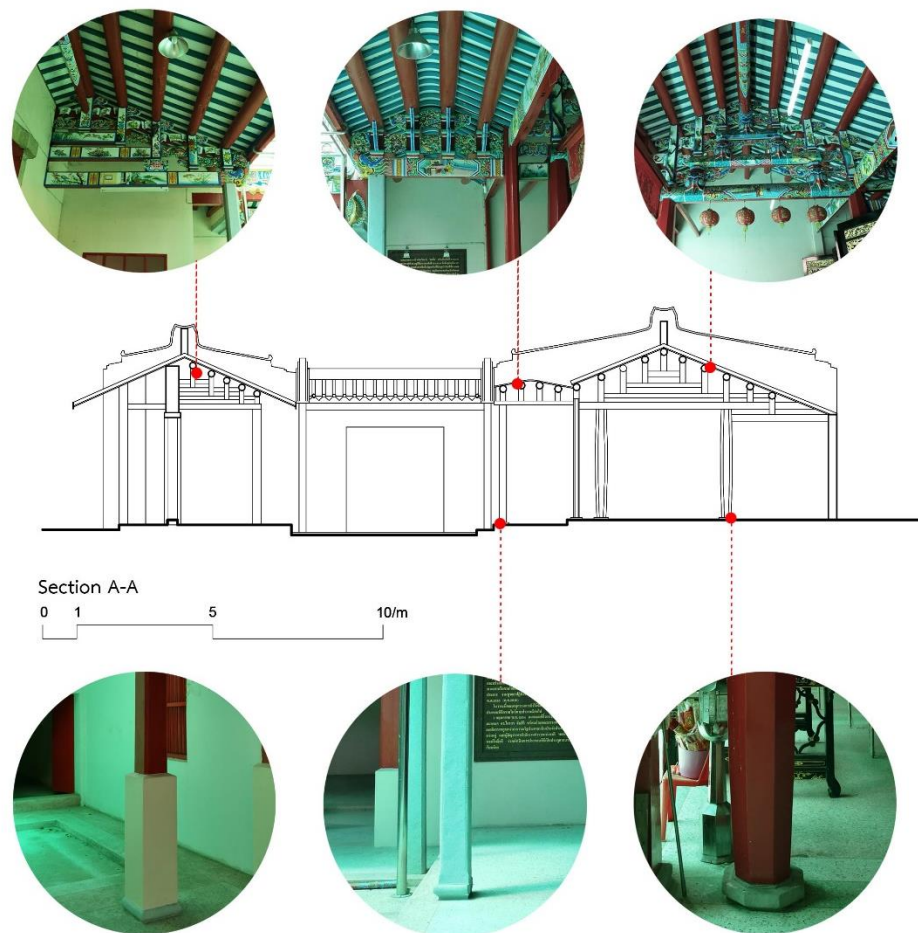


Figure 5. 19 The timber structural system of Tio Chew Ancestral Hall.

Another notable feature in Tio Chew Ancestral Hall is the roof form, ornamentation, and wall design (see Figure 5.20). The main roofs are double inclined and are topped with a ridge of tiles and statues for both decorative purposes and to weigh down the layers of roofing tiles for stability ("Teochew Architecture," 2005). Here, the roof ridges are ornamented with Chinese god statues, and motifs of animals and flowers. Further, the ornamentation on the ridges is incorporated into the walls of the buildings to form few layers of curved lines on the wall head, with paintings and animals crafted on it. Although there are no concrete references to the meanings of the roof ornamentation, the overall craftsmanship and color schemes on Tio Chew Ancestral Hall reflect traditional technique known as cut-and-paste porcelain shard work, “*Qian Ci*”, “嵌瓷”, a distinct Tio Chew art form in which porcelain pieces in a collage of colors are cut to size and pasted onto plastered figurines, providing a glazed sheen that gives a smooth and vibrant aesthetic ("Teochew Architecture," 2005).

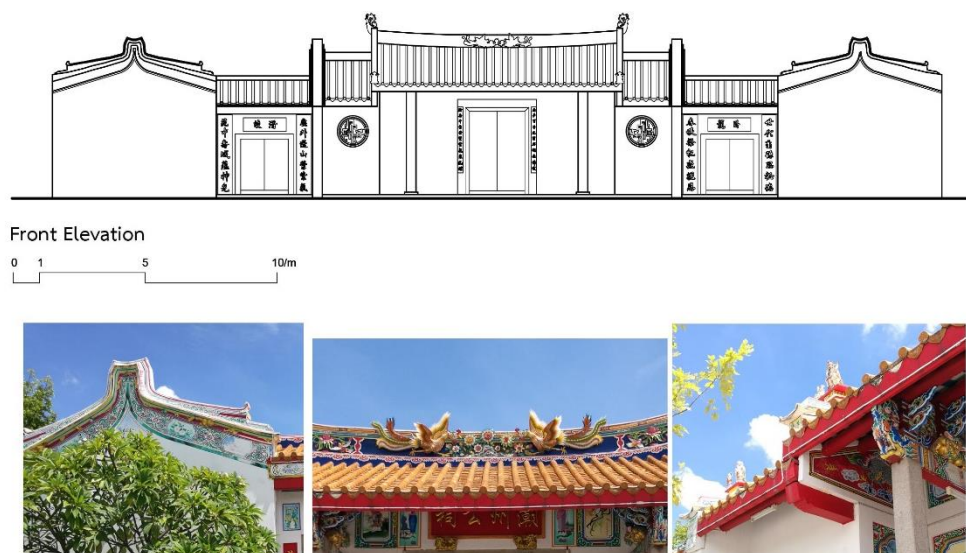


Figure 5. 20 The roof form, ornamentation and wall head design of Tio Chew Ancestral Hall.

Apart from the roof ornamentation, other decorative elements, including motifs, murals, images, and old Chinese scripts mainly displayed on the main doors, walls and front windows, provide a direct Chinese essence with the first sight of the front view (see Figure 5.21). First, the door panels are decorated with door gods to ward off evil and encourage the flow of good fortune. Other motifs with characters from Chinese mythology and tales are painted on the front wall while two circular windows are decorated with motif frames. Old Chinese scripts and characters are displayed above the door frames and on two sides of the doors.

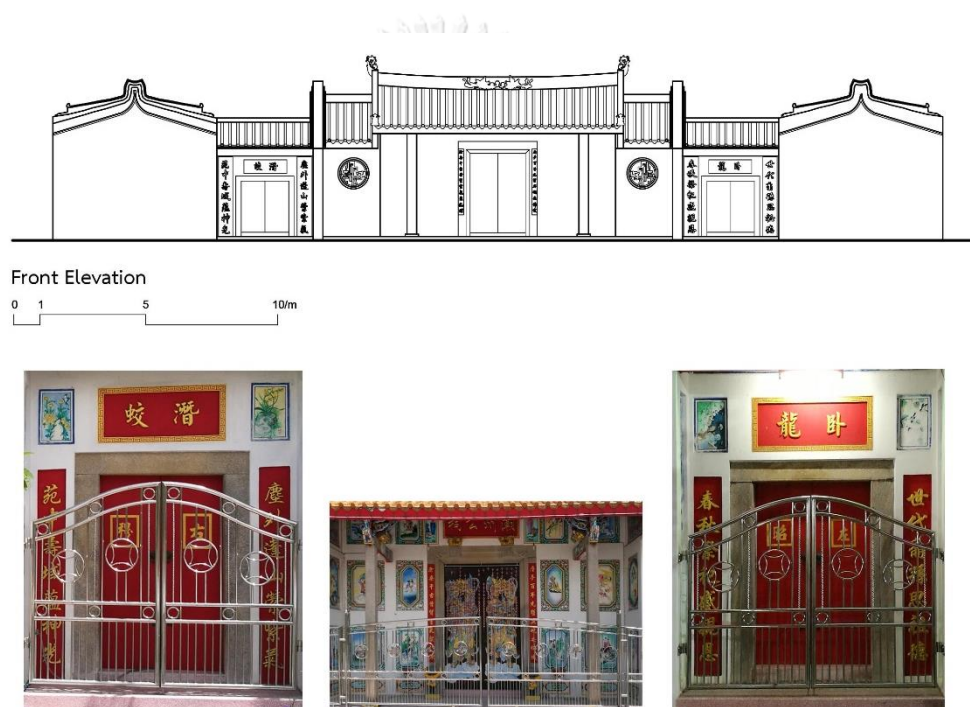


Figure 5. 21 The decorative elements on the openings of Tio Chew Ancestral Hall.

5.2.2 Tio Chew Old Office of Cemetery Affairs 泰国潮州会馆山庄办事处  
宁思堂

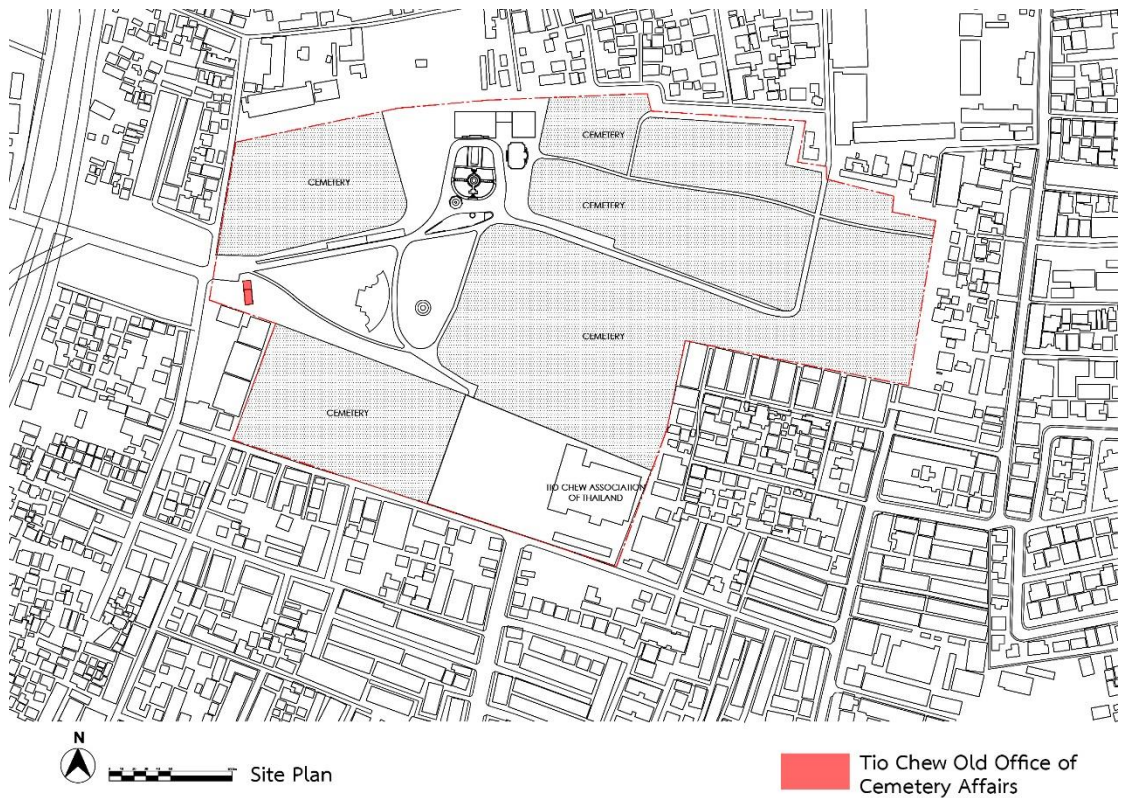


Figure 5. 22 Tio Chew Old Office of Cemetery Affairs in 2017.



Figure 5. 23 Location of Tio Chew Old Office of Cemetery Affairs.

Tio Chew Old Office of Cemetery Affairs also called *Ning Si Tang* is the second oldest building in Tio Chew Cemetery. Locating beside the main gate of the cemetery, the yellow building was one of the most important buildings in the past. A memorial plate from 1933 on the building states that it was named after a Tio Chew descendant, *Chen Ning Si*, 陈宁思, who was a wealthy business man and one of the administrators of Tio Chew Cemetery in the past (see Figure 5.24).

Based on the memorial plate, Mr. Chen passed away in 1933. His family encountered difficulties in sending his body back to China after he died. Seeing Tio Chew Cemetery as an environmentally friendly place, the Chen family built a building there to temporary house his corpse while waiting for it to be delivered. The building was later gifted to Tio Chew Cemetery for other functions and to commemorate Mr. Chen's past contributions.



Figure 5. 24 A memorial plate from 1933 in the Tio Chew Old Office of Cemetery Affairs states the building was named according to a Tio Chew descendant, *Chen Ning Si*, 陈宁思.



Figure 5. 25 Tio Chew Old Office of Cemetery Affairs also known as Ning Si Tang, 寧思堂.

Without much archival information, this double-storey building probably served as the management office for all kinds of cemetery affairs in the past based on its title as Tio Chew Old Office of Cemetery Affairs, or “*泰国潮州会馆山庄办事处*”. The ground floor was used as the main office and meeting area while the upper floor was an area for documentation (see Figure 5.26). Public entry is currently prohibited, and the building is maintained as a commemorative, with old memorial plates, documents and records of the deceased displayed in the main hall (see Figure 5.27).

With a rectangular form, this building is made of reinforced concrete with a post and beam system. The overall building is simple with its geometrical form, but the front façade appears outstanding as larger columns are applied, giving a more outstanding appearance on the front façade. The repetition of timber-framed windows can be seen around the entire perimeter of the building (see Figure 5.29).

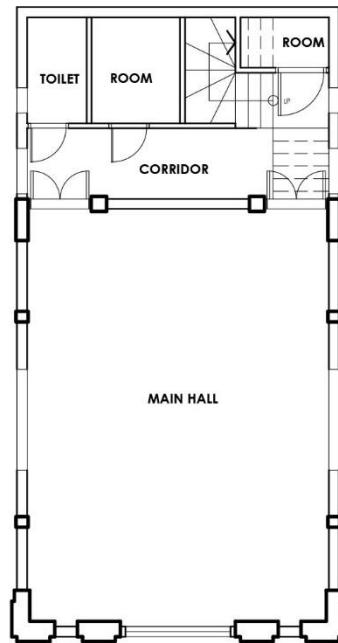


Figure 5. 26 First floor plan of Tio Chew Old Office of Cemetery Affairs.



Figure 5. 27 Old memorial plates, documents and records of the deceased are displayed in the main hall of Tio Chew Old Office of Cemetery Affairs.

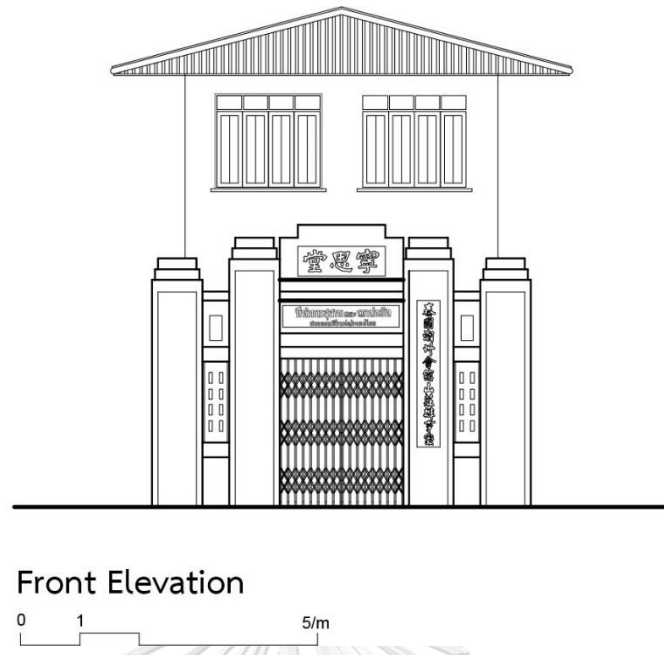


Figure 5. 28 Front elevation of Tio Chew Old Office of Cemetery Affairs.



Figure 5. 29 Front and side elevations of Tio Chew Old Office of Cemetery Affairs.



### 5.2.3 Tio Chew Cemetery Hall 潮州義山礼堂



Figure 5. 30 Location of Tio Chew Cemetery Hall.



Figure 5. 31 Tio Chew Cemetery Hall in 2017 (Left).

Figure 5. 32 Tio Chew Cemetery Hall in 2017, night view (Right).

Tio Chew Cemetery Hall is located at the center north of Tio Chew Cemetery along with Tio Chew Ancestral Hall, the Crematorium Pavilion and storage for urns as neighboring buildings.

Built in 1936, Tio Chew Cemetery Hall has a different appearance than the two earlier buildings based on its modernist style. For example, the modernist design principle of an open plan can be seen in this building. Based on the Chinese characters “潮州義山礼堂”, meaning Tio Chew Cemetery Hall, on the front façade, this single-storey structure was an event hall for different ceremonies, especially activities during the *Qing Ming* Festival and *Yu Lan* Festival, or Chinese Hungry Ghost Festival, in the past (Tio Chew Association 30th Anniversary Commemorative Publication, 1968). The building is designed with a symmetrical layout with a small center stage directly facing the main entrance, which serves as the main event space (see Figure 5.33). Without internal partitions, the columns, which are aligned parallel to the stage and main entrance, define the secondary spaces on both sides. The central space is normally set up as the main altar for worship while spaces on both sides are used for other activities.

As burial practices are now prohibited in Bangkok, the cemetery hall is no longer used to carry out funeral ceremonies but is still used as a function room during the *Qing Ming* Festival and Chinese Hungry Ghost Festival (see Figure 5.34). Therefore, this building, which is used only a few times a year, has fewer functions and is temporarily rented as a Tae Kwan Do training room in the present (see Figure 5.35).

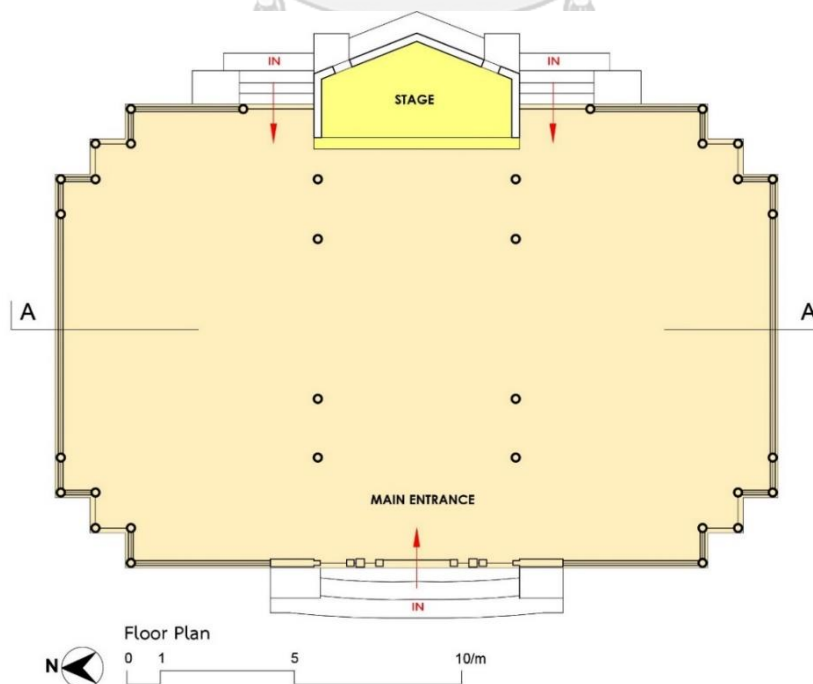


Figure 5. 33 The analysis on spatial layout and accessibility.



Figure 5. 34 Ceremony during the Chinese Hungry Ghost Festival in Tio Chew Cemetery Hall (Left).

Figure 5. 35 The current function of Tio Chew Cemetery Hall as Tae Kwan Do training room (Right).

With a symmetrical layout and clean-cut building form, this hall reflects strong architectural characteristics of the Art Deco style. Firstly, the overall building has a clear geometric form with hard-edged and smooth lines. It has a rectangular form, with concrete slabs continuously running above the windows to the flat roof. Parapets were used to hide the roof, giving a cubic and simple appearance to the building.

In fact, what makes Art Deco style in this cemetery hall unique is the combination of traditional Chinese and modern Art Nouveau elements through the decoration on the façades and opening at the entrance. Without any records of the architect and design of this hall, the author examined the architectural style of this hall following the analytical approach used in the existing research studies. For example, scholar have questioned the “modern” style in Thailand’s early modernist buildings between International Style and Art Deco Style based on the availability of decoration. As an example, Sala Chaloemkrung Theatre, one of the most important projects at the time was reinterpreted through Thai art as old symbolism and “modern” design through the form, styles, and materials (Fusinpaiboon, 2014). Thus, in Tio Chew Cemetery Hall, the embracement of the modern style combined with certain Chinese

elements could have been a “trend” following mainstream Thai modernism design by the Chinese.

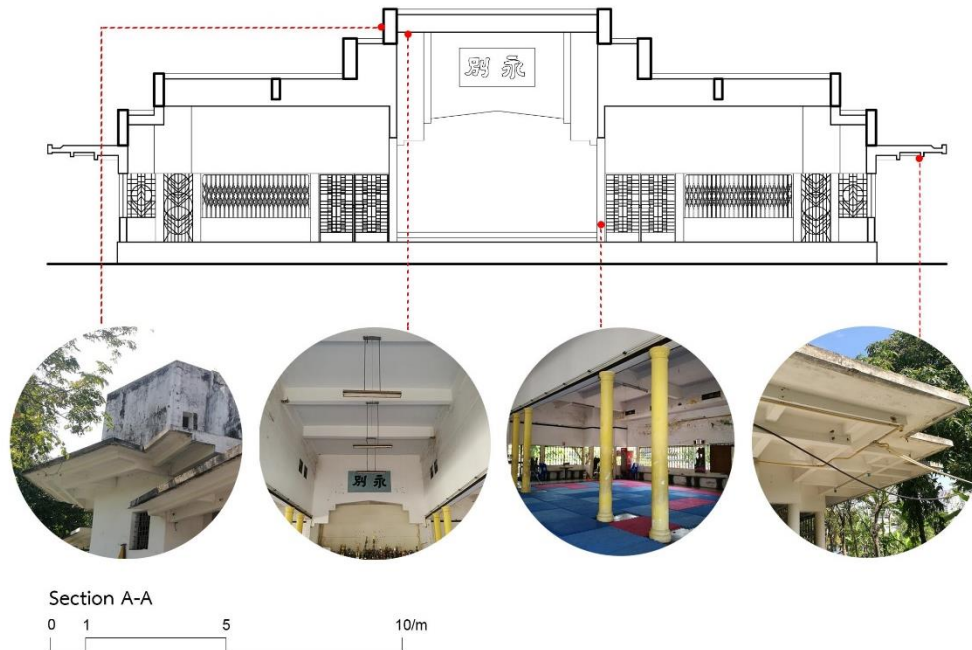
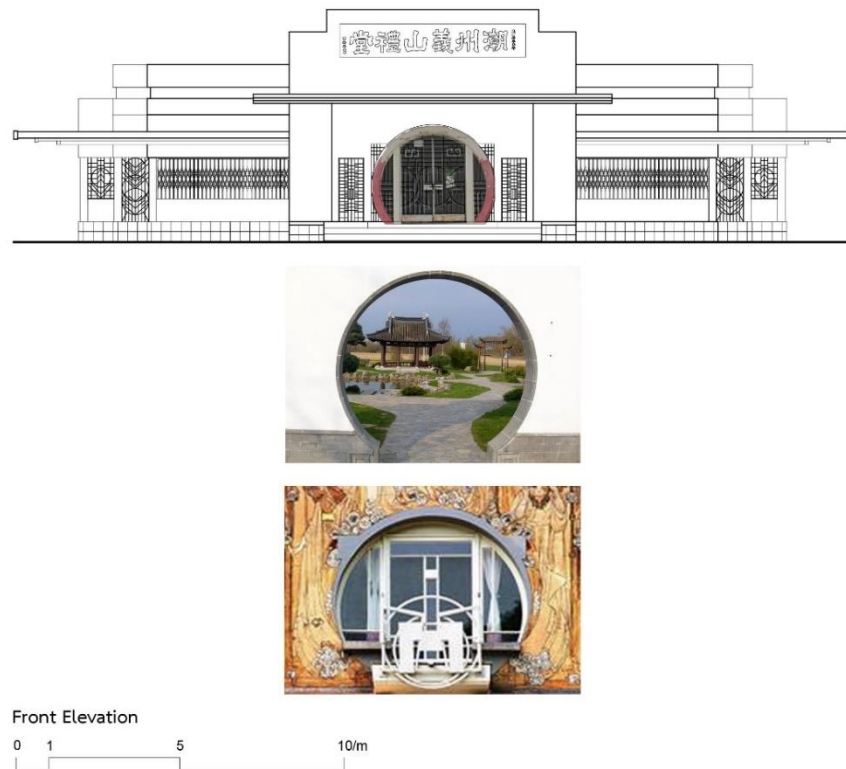


Figure 5. 36 The post and beam system of reinforced concrete used in Tio Chew Cemetery Hall.

Furthering the discussion of architectural style is the analysis of reinforced concrete as the overall structural system in Tio Chew Cemetery Hall (see Figure 5.36). Using the post and beam construction method, the entire building has circular columns as the overall vertical structural elements with rectangular beams to the flat roof. The application of circular concrete columns softens the edges of the four corners, at the same time responding to neighboring buildings that have circular columns.

In addition, climatic responsive elements including horizontal windows and long roof eaves across the entire perimeter of the building were applied in response to the hot and humid climate, for better natural ventilation, and to reduce direct sunlight and rain water.



*Figure 5. 37 The circular opening at the main entrance of Tio Chew Cemetery Hall that is reminiscent of traditional Chinese moon gate and the Art Nouveau style in the West.*

Although it has a modern geometrical form, Tio Chew Cemetery Hall is elegant combining traditional Chinese and modern architectural elements for the openings. For example, a Chinese essence is displayed with the circular opening that adopted as the door frame at the main entrance. It is reminiscent of a Chinese moon gate, a traditional architectural element that usually serves as the opening in a garden wall and acts as a pedestrian passageway. In fact, Chinese moon gate contains different spiritual meanings. One represents class and beauty and is widely used by Chinese nobility for garden gate to optimize the full moon view (see Figure 5.37).

In another way, this circular opening somehow reflects certain Western influences of Art Nouveau. The circular opening as well as door frames on both sides have a similar style of opening as the Art Nouveau in Caucie House in Brussels. Thus, the imitation of Chinese traditional moon gate and comparison with Western Art Nouveau style creates a fusion of traditional and modern aspects.

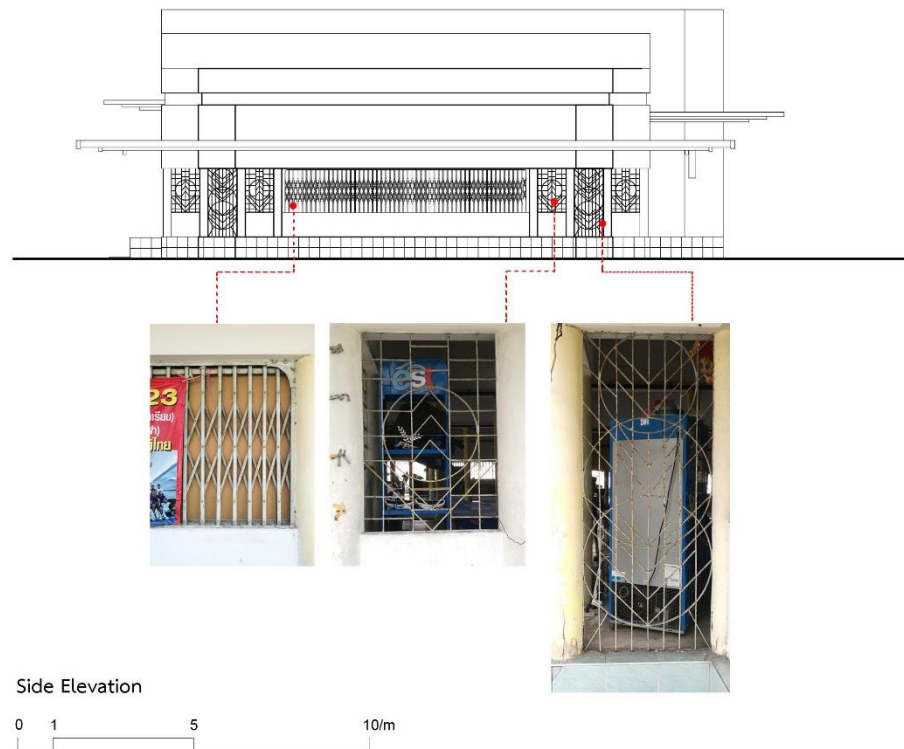


Figure 5.38 Fixed iron bars with the repeating of geometrical patterns covering the openings of Tio Chew Cemetery Hall.

Another significant feature on this building is the presence of motifs and patterns on the façades. The continuous openings across the entire buildings are framed by fixed steel grates while the edges of the four corners are covered with fixed iron bars, designed with repeating geometrical patterns combined with straight lines, circles, squares and V shapes, for another modern expression of façade treatment (see Figure 5.38).

Lastly, several Chinese characters displayed in Tio Chew Cemetery Hall have meanings associated with the dead and saying goodbye. For example, the Chinese characters displayed above the stage, “永别”, and two sets of Chinese characters above the back doors, “长逝” and “自朕” share the meaning of farewell forever.



Figure 5.39 Chinese characters in Tio Chew Cemetery Hall.

### 5.2.4 Crematorium Pavilion 火化台

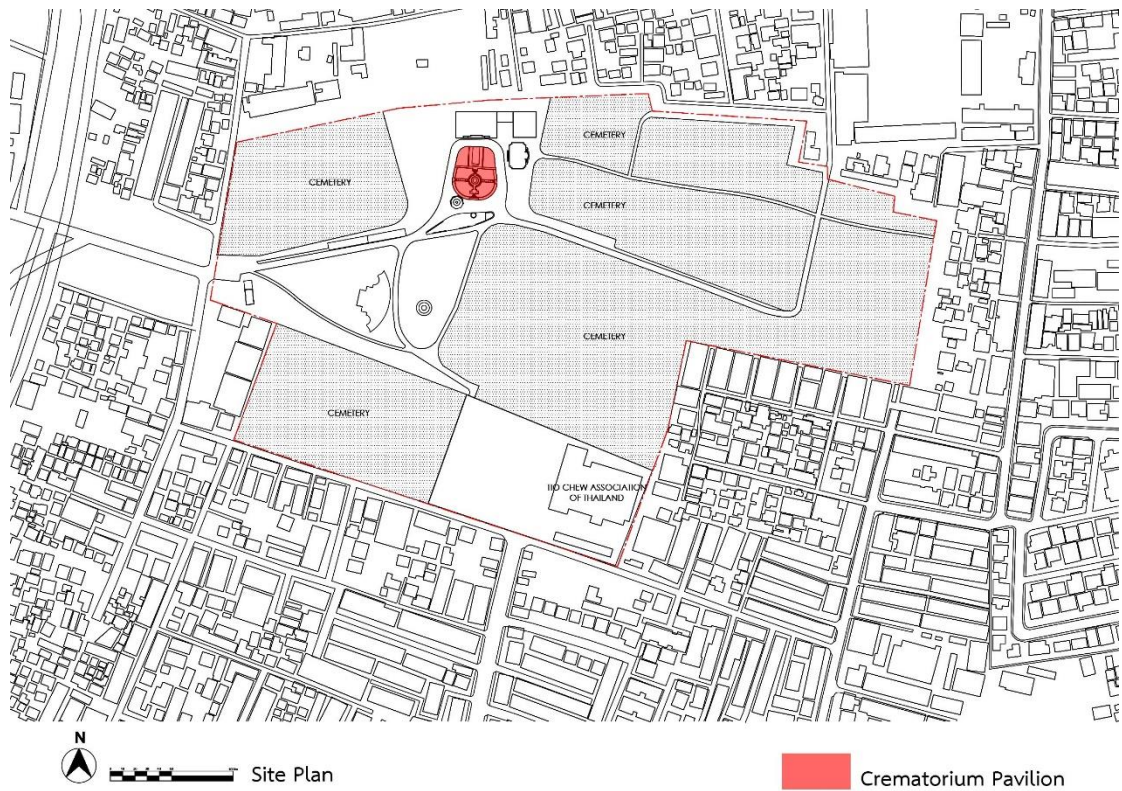


Figure 5. 40 Location of the Crematorium Pavilion.

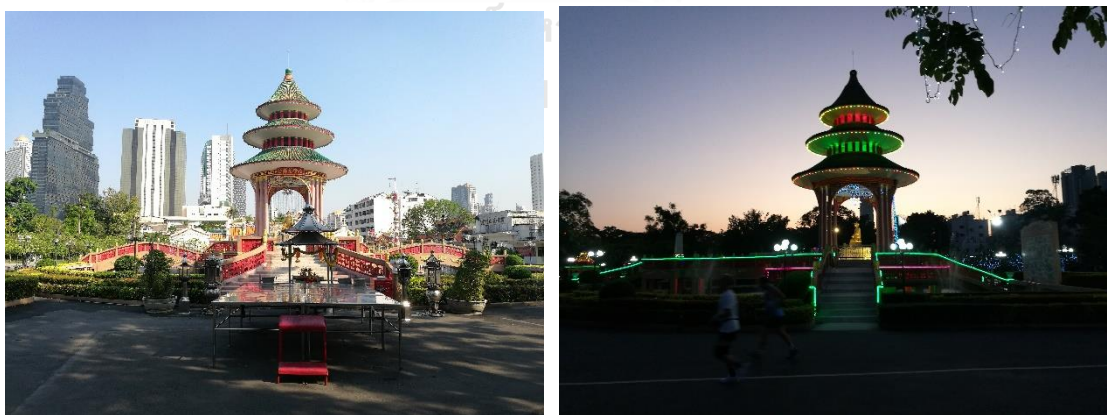


Figure 5. 41 Crematorium Pavilion in 2017 (Left).

Figure 5. 42 Crematorium Pavilion in 2017, night view (Right).

Built in 1960, the crematorium pavilion located at the center among the other old buildings, is the latest structure built in the cemetery. In the past, the area in front of Tio Chew Ancestral Hall was used to conduct cremation ceremonies, which is currently the location of the Crematorium Pavilion. The area previously used to conduct cremation ceremonies contains historical importance and is perceived as an untouched area (see Figure 5.43 & 5.44). This explains why the neighboring buildings are positioned around the Crematorium Pavilion, with all entrances facing it as a sign of respects.



Figure 5. 43 The land in front of Tio Chew Ancestral Hall was used to conduct cremation ceremonies in the past (Tio Chew Association 30th Anniversary Commemorative Publication, 1968) (Left).

Figure 5. 44 A raised platform is positioned in front of the Tio Chew Ancestral Hall (Right).

Basically, the layout of the Crematorium Pavilion is in two parts: a part defined by a raised platform is positioned on the North in front of Tio Chew Ancestral Hall (see Figure 5.45), and a pavilion enshrined with a god statue and lotus water fountain on the South. In fact, this layout can be explained according to Chinese beliefs, or *Feng Shui*. For example, a concrete wall with a painting of mystical animals, Chinese motifs and flowers acts as a barrier with the god statue and the ancestral hall that house memorial plates of the deceased. This is because the Chinese believe the forces between the god and the deceased are opposing. Therefore, the pavilion that enshrines with *Dafeng Gong* god statue is faces to the South and is separated from the



ancestral hall by a wall (see Figure 5.46). Further, the water fountain beneath the pavilion also represents a good sign for the god statue.

In addition, the overall layout of the Crematorium Pavilion is a strong axis for the site, simply based on the circular plan and symmetrical layout formed by the four staircases on the sides.

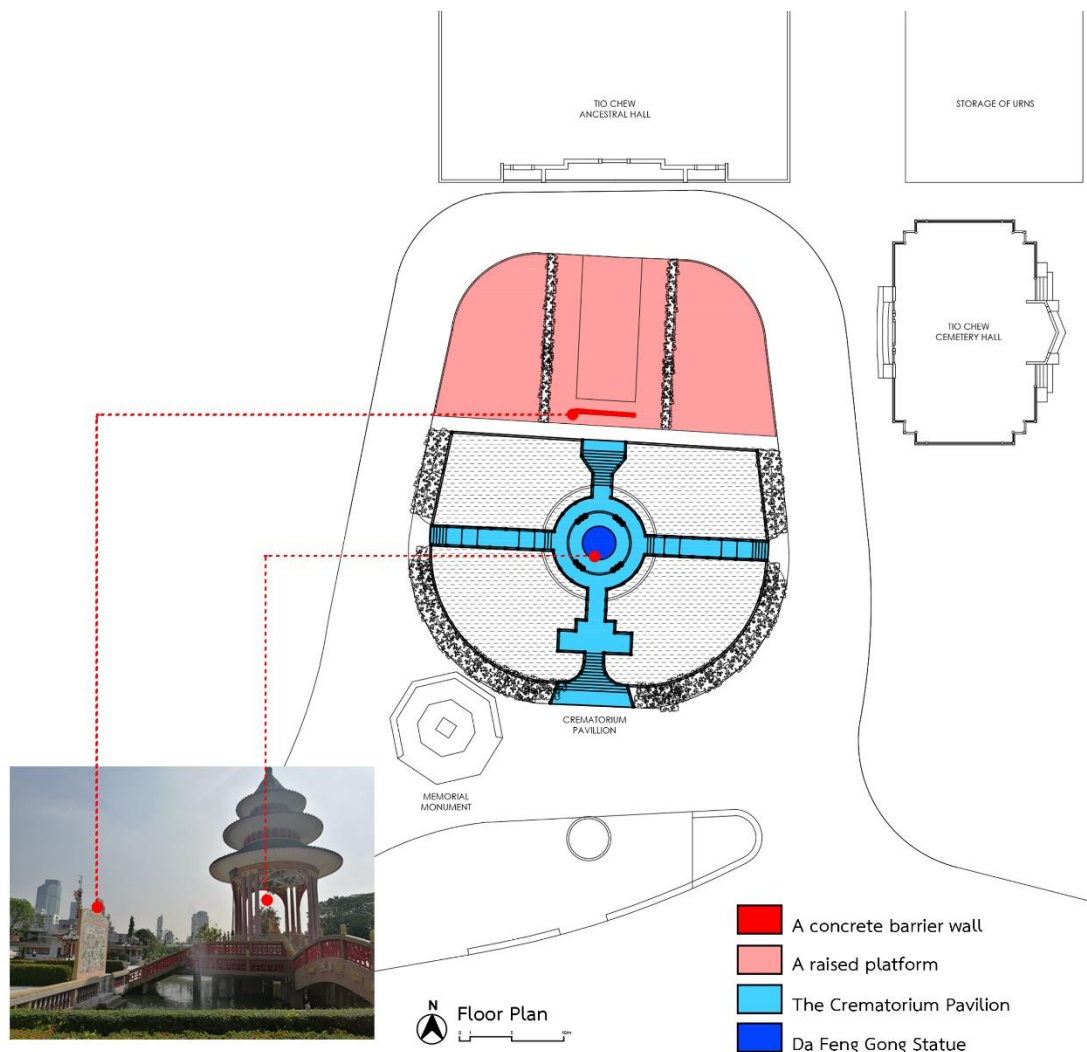


Figure 5. 45 A concrete wall on a raised platform acts as a barrier between Tio Chew Ancestral Hall and Crematorium Pavilion.



*Figure 5. 46 A concrete wall acts as a barrier with the god statue and Tio Chew Ancestral Hall.*

The Crematorium Pavilion presents strong Chinese characteristics through the structures, roof, colors, and decorations. Firstly, the multiple roof eaves with free standing columns exhibit the characteristics of the Chinese pagodas, which are used as places for worship for commemorative purpose for sacred relics. The use of circular columns around the central stage with detailed of decoration, especially under the eaves and ceilings, increases the aesthetic value of the main space and emphasizes the god statue. Other than that, the repetition of Chinese motifs on the railings also enhances the Chinese features of the structure. Lastly, the application of colors, including red, gold, green and brown is outstanding especially surrounded by the buildings, which is otherwise mostly white.

### 5.2.5 Storage for Urns

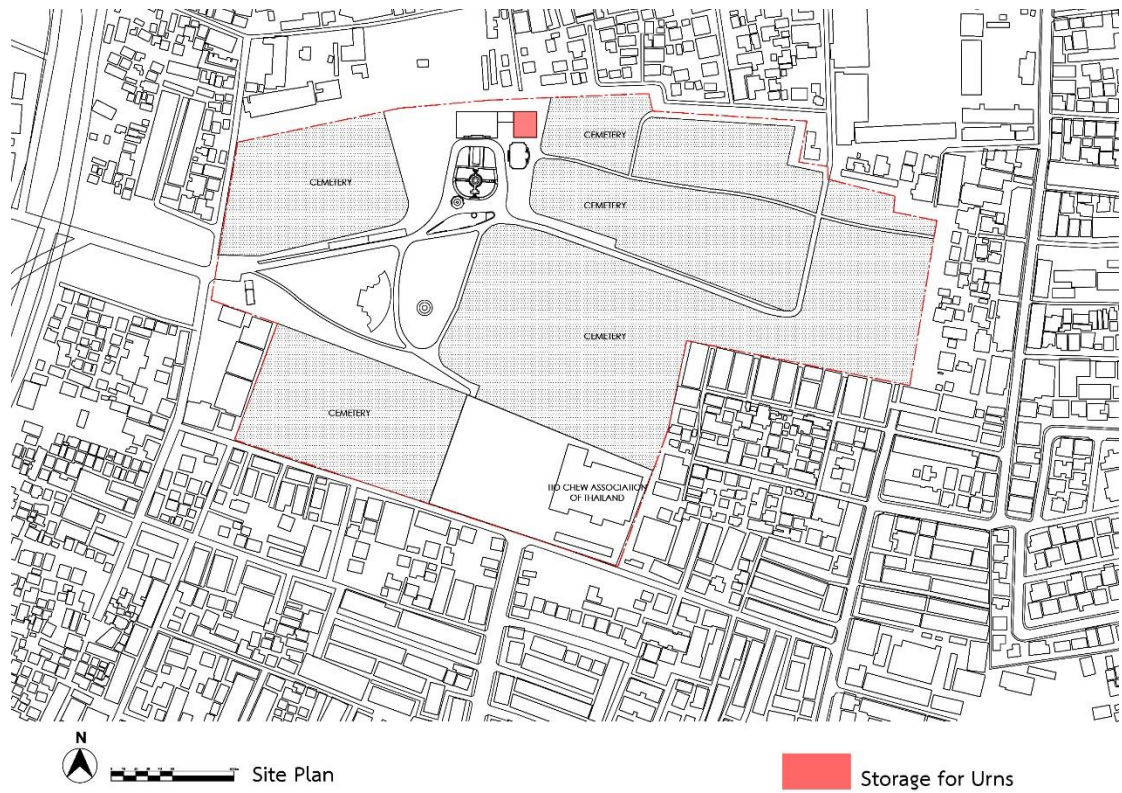


Figure 5. 47 Location of the storage for urns.



Figure 5. 48 The storage for urns in 2017.

Apart from buildings with significant Chinese elements, a building located beside Tio Chew Ancestral Hall is used for the storage of urns. The entire structure is enclosed by a reinforced concrete wall and steel trusses form the overall structural roof system. Skylights provide the internal space with sufficient lighting.

Based on observations, the building which its presence of urns and a painting of Chinese god on the wall was built with the main function of storing urns. As the cemetery no longer provides funerary services, the building is now a living space for the family, who are care takers of the cemetery.

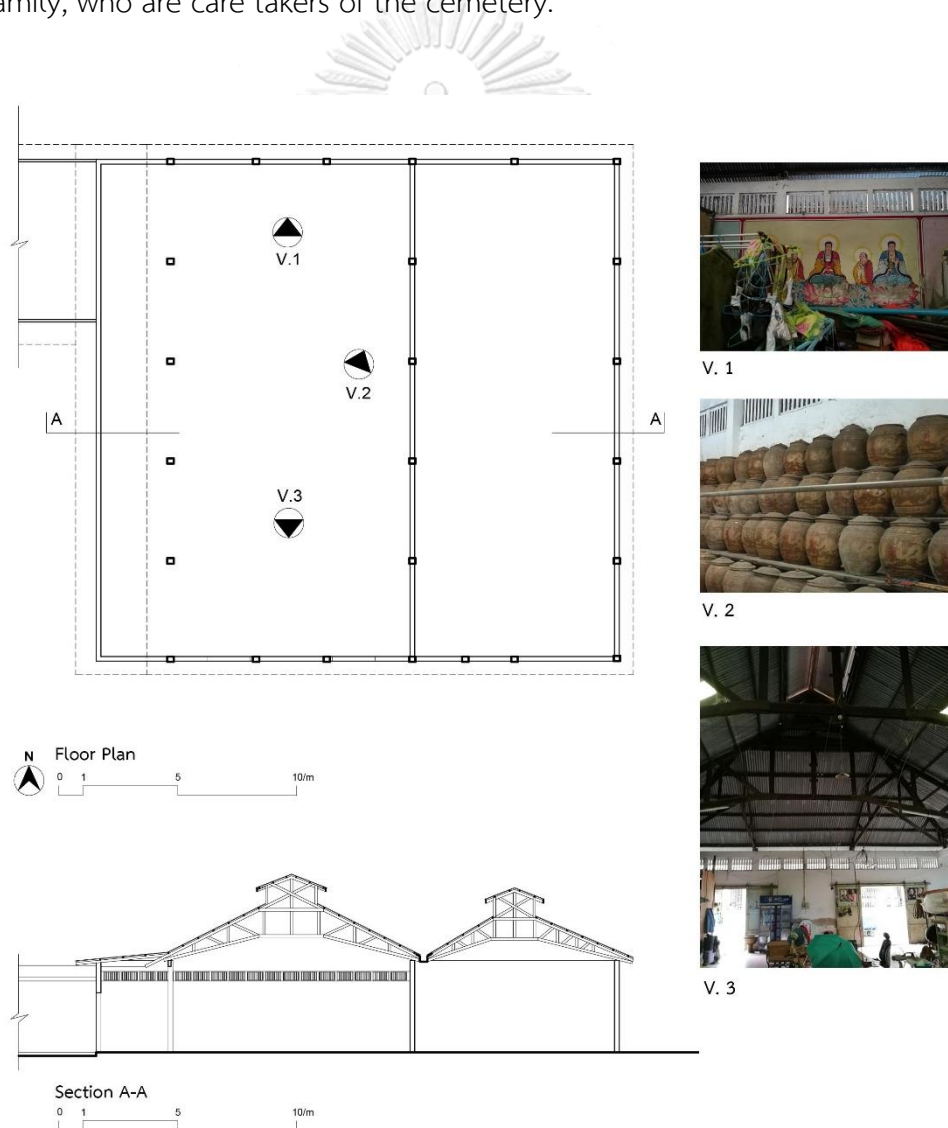


Figure 5. 49 Current usages of the storage for urns.

## 5.2.6 Elaborate Grave 万人公墓



Figure 5. 50 Location of the elaborate grave.



Figure 5. 51 Elaborate grave in 2017 (Left).



Figure 5. 52 Elaborate grave in 2017, night view (Right).

The final structure to be discussed is the elaborate grave. Entering from the main entrance in the direction of the Crematorium Pavilion, the huge slope with three combined tombstones facing to the East is known as the elaborate grave or “万人公墓”.

Based on an interview with the manager of Tio Chew Association, this served as a public grave where the deceased without families were buried together in the past. Nowadays, it serves as a memorial purpose, especially during the *Qing Ming* Festival. Similar to practices with general tombs, people worshiped and offer foods and joss sticks in front of the elaborate grave.

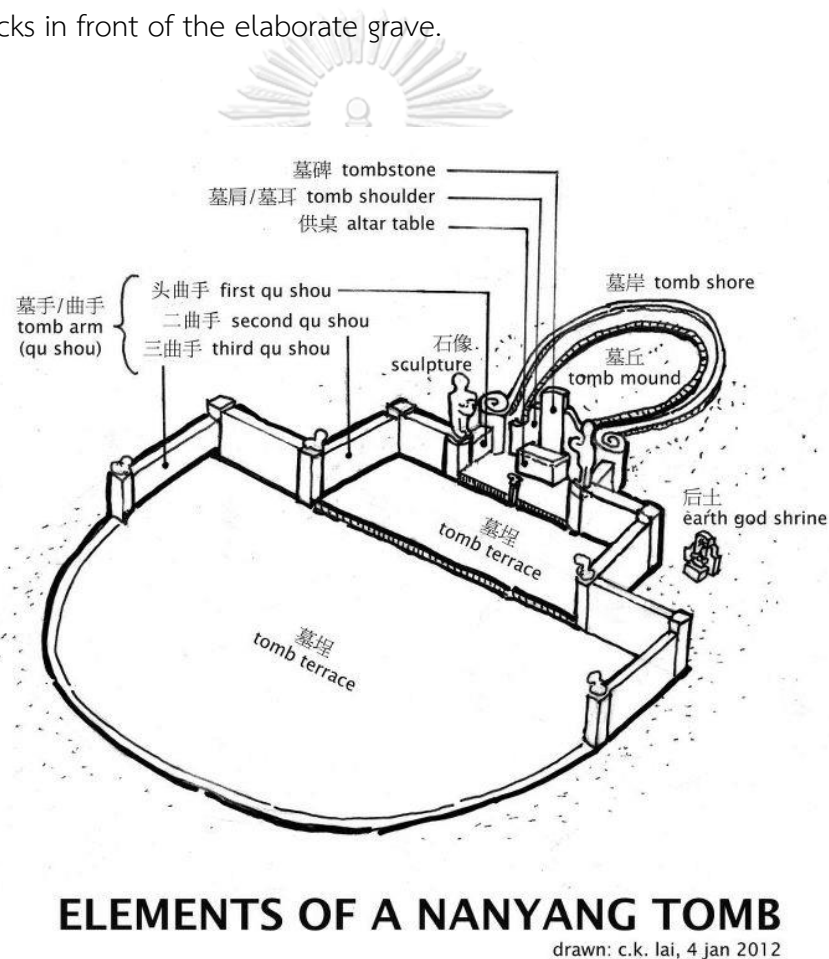


Figure 5. 53 Tomb drawing by Lai Chee Kien (Tan, 2014).

In fact, the Chinese tomb's design is described in relation to domestic ancestral worship ritual. The design of the home altar is similar to that of the elaborate grave (Tan, 2014). The tombstone, inscribed with ancestral information, is positioned at the center with an altar table located in front. The ridges at the sides are called “tomb arms” and extend out from the tomb stone to hug the forecourt or tomb terrace (see Figure 5.53). The During ancestral worship, family members gather around the forecourt with joss sticks and place food offerings on the altar table. Thus, the forecourt carries the meaning of unity and reinforces the meaning of filial piety between ancestor and family (Tan, 2014).

A floor plan of the elaborate grave in Tio Chew Cemetery shows that it was designed with main considerations of the decoration and murals on the tomb stones (see Figure 5.54). For example, the main tombstone is designed with a motif of lotus plants while the tomb arms have different kinds of craft motifs such as humans, animals, flora and Chinese script. These motifs represent the good signs and positive forces for ancestors and families.

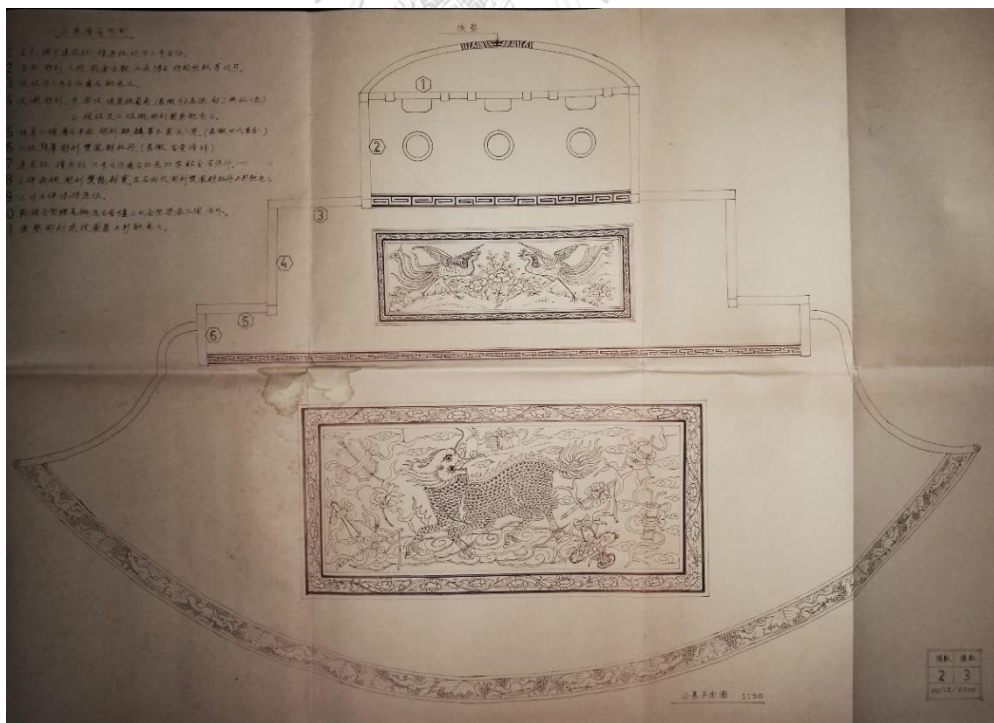


Figure 5. 54 Floor plan of the elaborate grave in Tio Chew Cemetery showing that it was designed with the main considerations of the decoration and murals on the tomb stones.

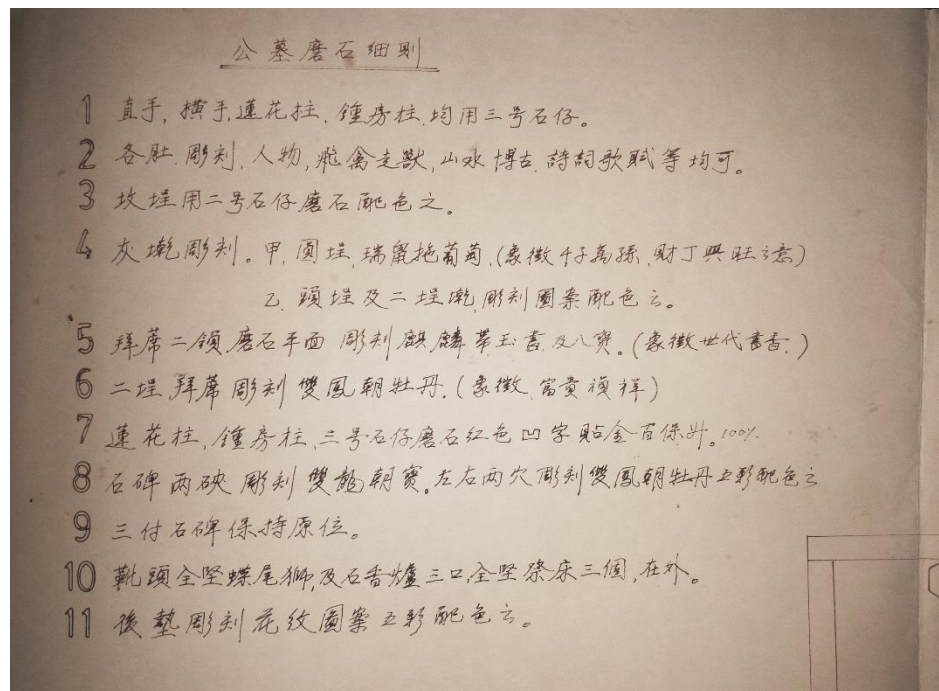


Figure 5. 55 The legend of the floor plan of the elaborate grave in Tio Chew Cemetery describes its design, which is focused on Chinese motifs.





## CHAPTER 6

### DESIGN

The history of Tio Chew Cemetery has been revealed through the historical development of the site as well as the historical buildings and structures within the cemetery compound. In this chapter, a design of an elderly center is discussed based on the historical context, current issues and future possibilities. By understanding Tio Chew Cemetery as a historic site with important cultural meanings and historical significance, the design involves new addition and adaptive reuse as the design strategy. Hence, the following discussion includes site analysis, design idea, design planning, programs and the final design outcome.

#### 6.1 Cemetery as a Recreation Area

As discussed, Tio Chew Chinese Cemetery was partially turned into a recreation area in 1996 for two main reasons: firstly, the decision of Tio Chew Association to provide a more walkable and better accessibility in the cemetery compound and secondly, requests from surrounding residents for a better jogging and leisure area. This resulted in the reconstruction of internal roads in the cemetery as well the creation of more landscape elements to beautify the cemetery, especially the central part with old buildings. Apart from the old buildings, there are also temporary structures built around the cemetery to fulfil several recreation activities, such as a fitness center, seating area for resting, Chinese chess, and karaoke.

##### 6.1.1 Roles of Tio Chew Association in the Management of Tio Chew Cemetery

The temporary structures were built by members of Tio Chew Association without its permission. This was disagreed on by the association and was taken as an issue because some structures distract from the existing graves, which is perceived by the association as disrespectful.

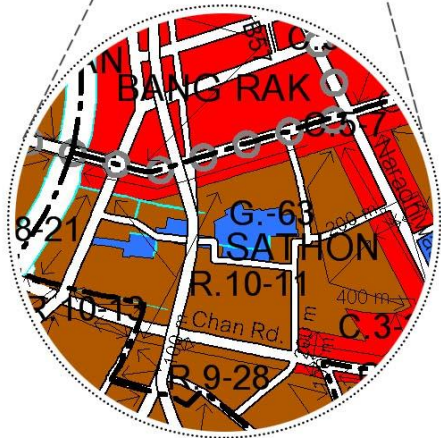
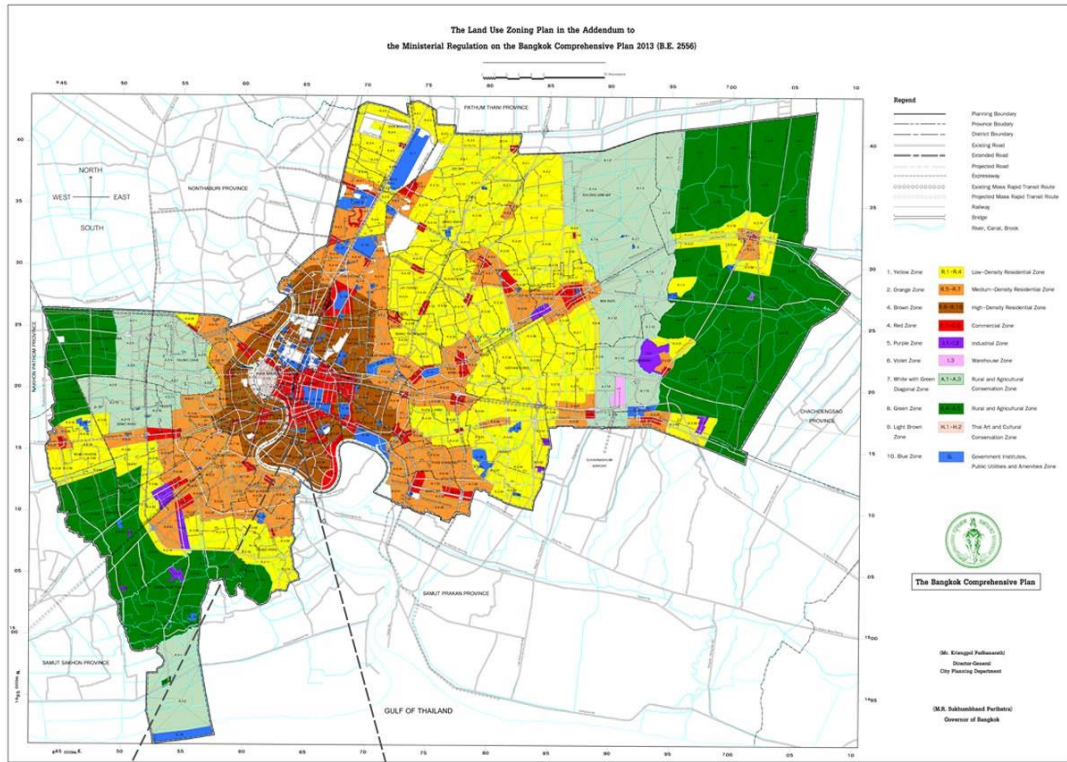
Other than that, several issues with Tio Chew Association were revealed through an interview with Mr. Suchart Waranusart, current manager of Tio Chew Association, who pointed out several important positive and negative issues. Firstly, while this huge plot of land served as a burial ground and is used only a few times a year for certain Chinese festivals, Tio Chew Association considered developing the land with other functions but did not do so due to concerns about the customs and traditions of Chinese families regarding their ancestors in the cemetery. Thus, instead of clearing the graveyards, the cemetery is now used as a recreation area is an alternative usage.

Furthermore, the manager considers the cemetery park successfully, mentioning it is environmentally friendly due to the wide-open area, greenery, and fresh air. Hence, this attracts surrounding residents of different age groups to visit the cemetery, especially the retired and elderly.

#### 6.1.2 Government Roles in Tio Chew Cemetery

Based on the Land Use Zoning Plan, Tio Chew Cemetery is in the blue, G zone, which is a government institutes, public utilities and amenities zone (see Figure 6.1). Further inquiry at the Sathorn District office revealed that the land can be used for public recreation and community purposes, but commercial uses are restricted.

On the other hand, the Open Space Plan which shows Tio Chew Cemetery in OS. 1 zone indicates it is an open space for recreation and environmental conservation (see Figure 6.2). It shows Tio Chew Cemetery as one of the largest open space in Sathorn District, after Lumpini Park. This further explains Tio Chew Cemetery is in environmental conservation zone and the government's role in maintaining it as a recreation area.



1. Yellow Zone	R.1-R.4	Low-Density Residential Zone
2. Orange Zone	R.5-R.7	Medium-Density Residential Zone
4. Brown Zone	R.8-R.10	High-Density Residential Zone
4. Red Zone	C.1-C.5	Commercial Zone
5. Purple Zone	I.1-I.2	Industrial Zone
6. Violet Zone	I.3	Warehouse Zone
7. White with Green Diagonal Zone	A.1-A.3	Rural and Agricultural Conservation Zone
8. Green Zone	A.4-A.5	Rural and Agricultural Zone
9. Light Brown Zone	H.1-H.2	Thai Art and Cultural Conservation Zone
10. Blue Zone	G.	Government Institutes, Public Utilities and Amenities Zone

Figure 6. 1 Land Use Zoning Plan in the Addendum to the Ministerial Regulation on the Bangkok Comprehensive Plan 2013. (B.E. 2556).

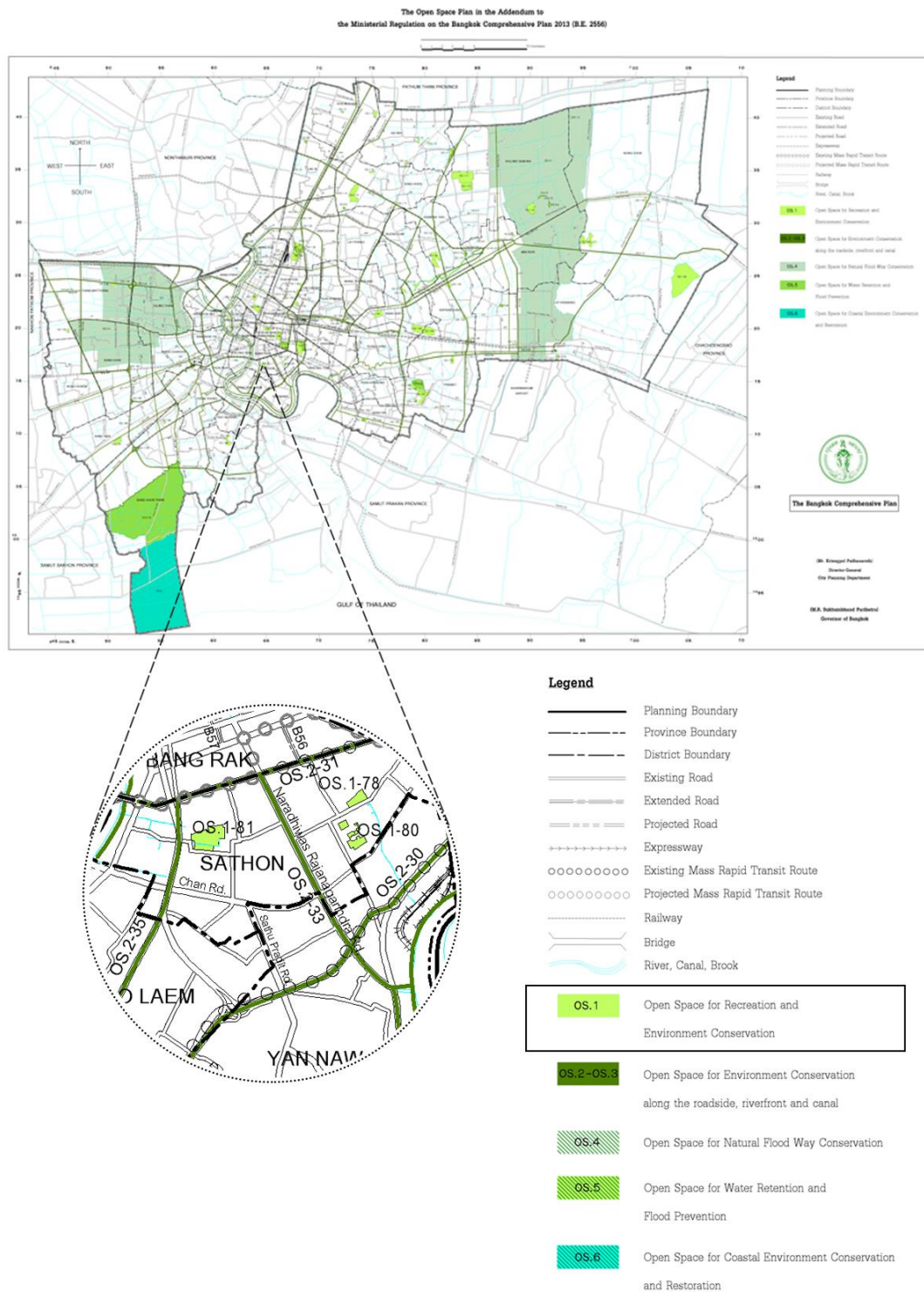


Figure 6. 2 Open Space Plan in the Addendum to the Ministerial Regulation on the Bangkok Comprehensive Plan 2013. (B.E. 2556).

## 6.2 Site Analysis

### 6.2.1 Land Use Patterns and Landmarks (Macro)

The location of Tio Chew Cemetery in the central part of Sathorn District, is quite apparent from the site plan by tracing a huge plot of open space surrounded by high-density building blocks (see Figure 6.3). Currently, the cemetery is mainly surrounded by low-rise residences. The area within a diameter of 800 meters of the Tio Chew Cemetery contains some public buildings such as institutions and healthcare centers, including St. Louis Nursing College, Assumption College, Kosolvithaya School, and St. Louis Hospital. Most of these larger-scale buildings are located along the secondary road that branches from the primary road, Sathorn Nuea Road. Further, other significant landmarks include Wat Borom Sathon Srisutsopon Rangsan (Wat Don) and Hainan Chinese Cemetery to the West of Tio Chew Cemetery.

### 6.2.2 Land Use Patterns and Landmarks (Micro)

The area within a diameter of 400 meters from Tio Chew Cemetery, mainly contains housing compounds such as shophouses, old timber houses, and apartments (see Figure 6.4). In addition, Tio Chew Cemetery is an interesting site due to the existence of different religious buildings nearby, including a Jawa mosque, Wat Witsanu, which is a Hindu Temple, and a Burmese temple known as Wat Prok. Therefore, the site is located in an area with multi-ethnic communities, including Muslims, Hindus, Burmese, Chinese, and Thai communities.

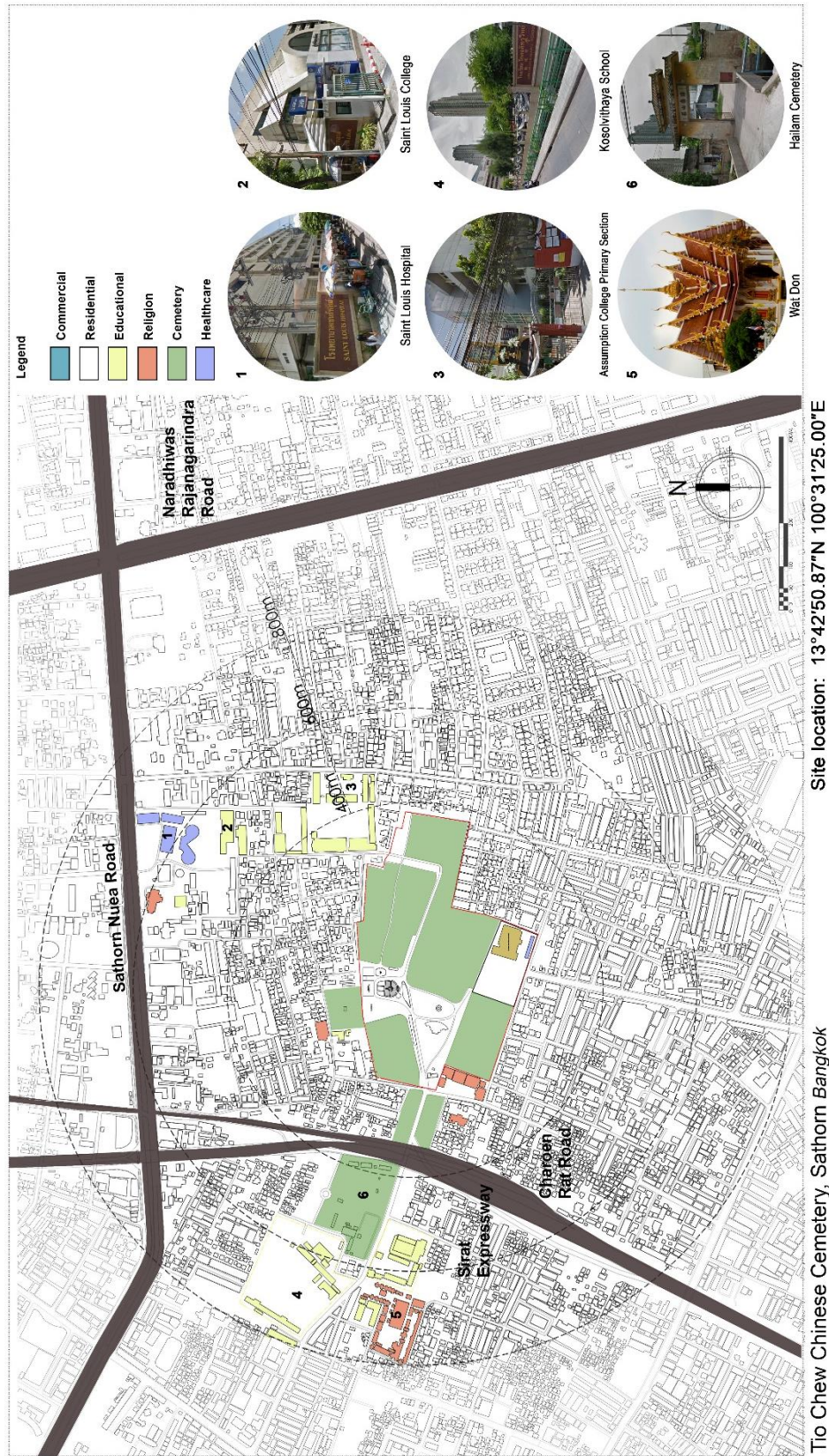


Figure 6. 3 Land use pattern and landmarks (marco).



Figure 6. 4 Land use pattern and landmarks (micro).

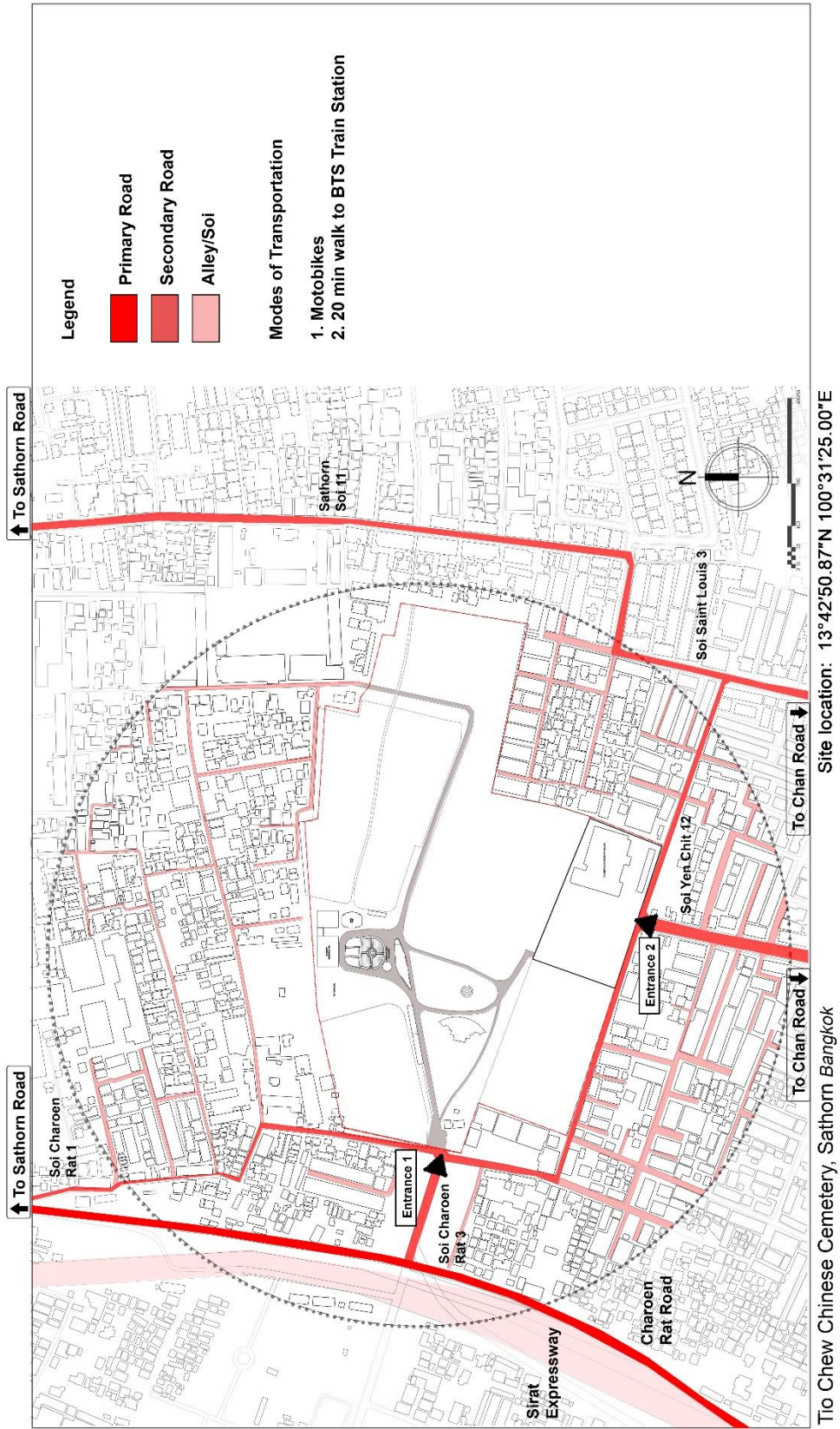


Figure 6. 5 Accessibility and circulation.



### 6.2.3 Accessibility and Circulation

Occupying a huge piece of land, Tio Chew Chinese Cemetery is considered less accessible because there is only one main entrance that opens to the primary road, Charoen Rat Road. Hence, it is convenient for visitors who use their own vehicles from the main entrance but less convenient for visitors by public transport. As the cemetery is mainly surrounded by alleys, or soi, the issue of lack of accessibility is also due to the narrowness of the alleys, which are only open to one-way driving for vehicles and have limited access for pedestrians (see Figure 6.5).

### 6.2.4 Activities and Users

As mentioned, the cemetery is actively used as a recreation and sports area. It can be observed that most of the visitors are residents from the surrounding areas of different age groups, including the elderly, adults, and teenagers (see Figure 6.6).

Based on observations, in the morning session from 6am to 9am, the elderly, aged above 60 years old, are the major group present in the cemetery park, while adults aged 40-60 years old are the second major group. During this time, different kinds of sports such as jogging, exercise in the fitness center and badminton are the main activities in the cemetery park. Some elderly users gather around tables for static activities, such as playing Chinese chess and singing karaoke.

Next, the period from 10am to 1pm noon was observed to have lesser people but remained active with the elderly and adult groups. As it is the period around lunch time, some elderly visitors were observed carrying out some light cooking under the temporary structures and chit-chatting with their friends. However, the afternoon session from 1pm to 5pm was observed to be the quietest with the fewest visitors, but some of the elderly remained there to spend free time. During the period from 5pm to 8pm, the cemetery park becomes active again with all groups visiting for evening exercise. During this time, the cemetery is full of many youngsters who jog and play basketball and badminton. There are also Tae Kwan Do training sessions held in the Tio Chew Cemetery Hall.

In summary, the cemetery is an active leisure spot used by residents of the surrounding area for various kinds of sports and leisure activities. Elderly and adult are the most frequent users of Tio Chew Cemetery.



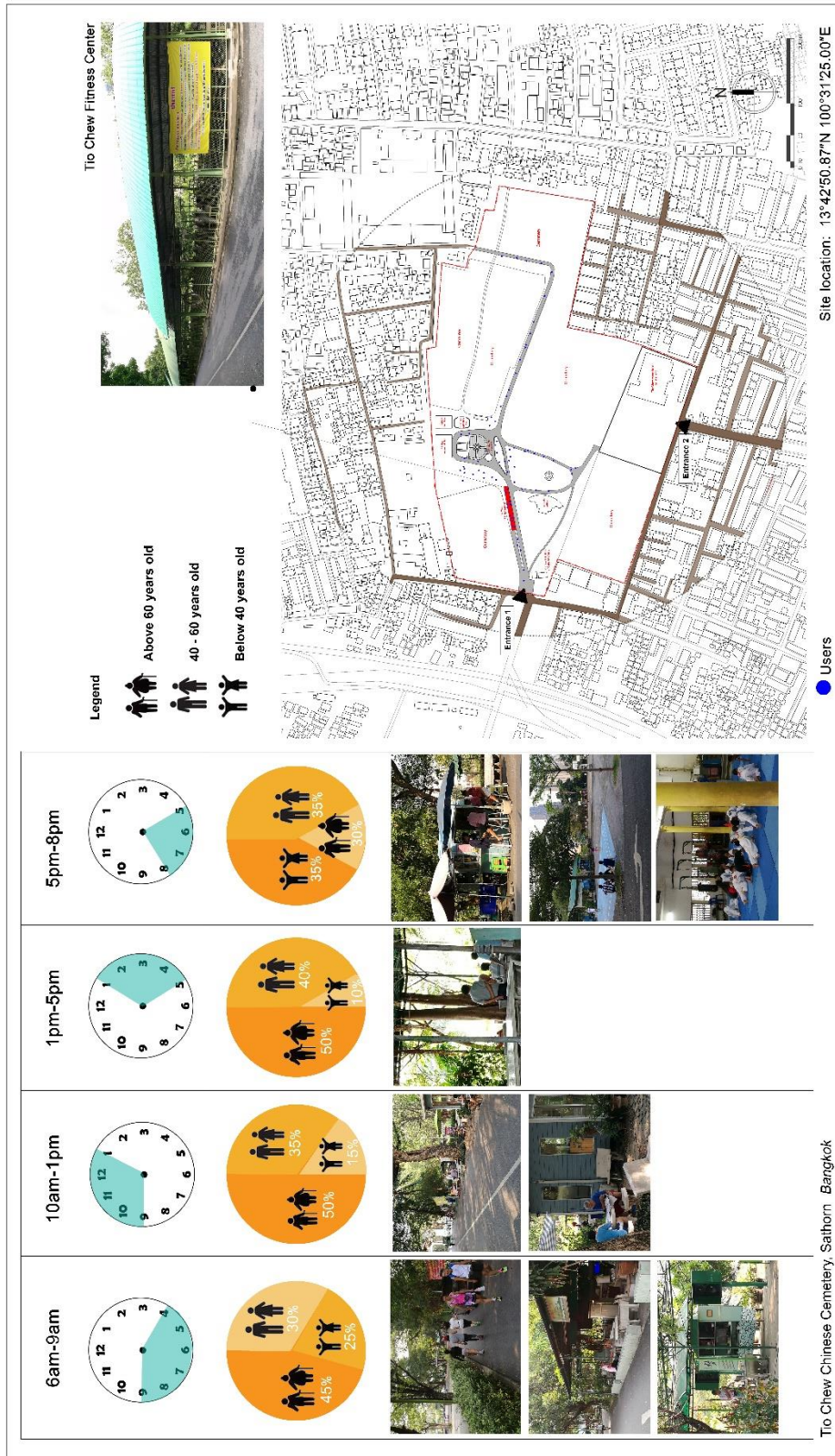


Figure 6. 6 Activities and users.

### 6.3 Site Selection

The selected site is on the West of Tio Chew Ancestral Hall and Crematorium Pavilion. Currently occupied by two basketball courts, two badminton courts, and a small playground.



Figure 6. 7 Map of Tio Chew Chinese Cemetery. (Source: Google Maps)

There are few reasons why this site is selected. First, as this cemetery is occupied by different structures including the old buildings, monuments, new-built temporary structures, and more importantly the graveyards, a site without affecting the existing context especially the buildings and tombstones is the main consideration. The selected site which remained as vacant field with a small playground and two basketball courts beside Tio Chew Ancestral Hall fulfills the first criteria of site selection.

Second, based on the users and activities analysis, the center area occupied with most of the old buildings is the most active zone where all kinds of leisure and sports activities are carrying out in this area. This serves as a design opportunity where the existing activities, circulation, zoning could be the “clues” for the new design. Besides, it is also beneficial to propose alternative usages which can respond to the existing activities.

Besides, the site is chosen to respond to the existing activities, in which sports is the major activities in the cemetery. This design tries to present alternatively by proposing passive activities and programs in the elderly center and target to benefit different aged groups for more possibilities in the cemetery.

Further, the site also selected based on the condition of the adjacent structures. Tio Chew Ancestral Hall which maintained well but serving less functions; the storage for urns which improperly occupied as living and storage purposes are observed to be improved. The relationship of new elderly center is believed to be enhanced through the adaptive reuse in both old buildings.

Therefore, the site includes the historical buildings- Tio Chew Ancestral Hall, Tio Chew Cemetery Hall, the Crematorium Pavilion, and the storage building for urns. It occupied total area of 7,000 square meters (see Figure 6.7).



*Figure 6. 8 Panoramic photo of site, V1.*



*Figure 6. 9 Panoramic photo of site, V2.*



*Figure 6. 10 Panoramic photo of site, V3.*



*Figure 6. 11 Panoramic photo of site, V4.*



## 6.4 Design Idea

In response to the historical research and current site conditions, an elderly center is proposed in Tio Chew Cemetery based on three reasons.

### Reason 1: To serve community purpose

Tio Chew Association, which considered development plans for the cemetery but remained inactive due to respect for customs and beliefs, contributed an idea of a new building to serve the community.

### Reason 2: Target users and site opportunity

This idea extends to the second reason which considers frequent users and activities. As discussed, the elderly is the most frequent users in the cemetery and have a need for open space, more greenery and clearer air. By taking advantage of this site as a recreation area, in which sports is the major activities in the cemetery, this design tries to present alternatively by proposing passive activities and programs in the elderly center and target to benefit different aged groups for more possibilities in the cemetery.

### Reason 3: Future Possibilities

Further, in previous chapters, the analysis on historical development and architectural analysis on the historical buildings present Tio Chew Cemetery as unique in terms of its historical context. All buildings and structures that built in different periods are signified by its own functions, styles and meanings. Interestingly, they stand harmonically with the neighbor buildings yet without losing its own style. Such phenomena explain Tio Chew Cemetery as unique context, which rarely presence in an urban context. Therefore, a new design proposed here presents as a “continuation” that serves alternative functions, style, and meanings in of contemporary period. As the future of the cemetery is uncertain, it is hoped that the new design help to sustain and prolong the life of this historic site.

By referring to Francoise's five strategies of old buildings with new forms, "weavings" is applied as an ideal strategy suits to the context and design intention of this design project.

As discussed, the strategy of "weaving" means new work is woven in and out of the original building fabric. Cases in this category involve the edit works on the existing structures while new elements are added over or into the existing fabric. In this project, the design includes additions and adaptive reuse in Tio Chew Ancestral Hall and the storage for urns based on the existing context and building conditions (more discussions in the following sub-chapters). Several reasons to explain "weavings" that suitable for this design in respond to the above reasons.

#### "Weaving" in respond to Reason 1 & 2

First, the idea of "weavings" is respond to both tangible and intangible aspects stated in Reason 1 & 2. Tio Chew Association as the administer of Tio Chew Cemetery, uphold the vision of providing welfare services since it established reflects their roles in Tio Chew Cemetery, which is now opened as public recreation use. To respond to its constraint of development plan in the cemetery, the strategy of "weavings" is suitable in terms of economical purpose. The new design considers the existing structures carefully by focusing major tasks on new building but less structural impact on the old buildings. Therefore, less expenses on demolition and serves as an economical requirement for a benevolent organization like Tio Chew Association. Compared to other strategies such as "Insertion", "Parasites", and "Wraps", they are less suitable in this project because the approaches on buildings structures are less applicable.

#### "Weaving" in respond to Reason 3

Further, the strategy of "weavings" also relates to design aspect that explain Reason 3. New building should be designed by referring to the existing context, inversely, the existing buildings serve as the "clues" to create the new. Surrounded by



old buildings, tombs and sport facilities, a new design taken existing context as site opportunities and challenges. Several design aspects such as zoning, axis, form, styles, functions, and Chinese beliefs are resulted by existing buildings that serves as important factors to new design outcome. Therefore, “weavings’ is perceived as an ideal strategy that suits to the context of Tio Chew Cemetery through the understanding of existing context. The following section discusses “weavings’ in relation to design planning based on the context of Tio Chew Cemetery.

## 6.5 Design Planning

### 6.5.1 Building organization

In the preliminary design stage, the building organization, building height, roof profile, circulation, and space quality were tested by study models (see Figure 6.12).

To remain the existing uses and sport facilities on the selected site, the initial building planning is started by occupying the land with maximum area and height of 3 storeys. However, the volume and area failed to respond to the site especially the neighbor buildings which mostly are single story and modest in scale. Therefore, in the second scheme, the building scale is reduced by separating the spaces and lowering it to two storey heights. This scheme appears to respond to the context better in terms of the building scales.

Further, a L-shaped layout is tested as third scheme, shown in study model 3. However, by maintaining the space placement and building volume in second scheme, third scheme shows smaller area and less responsive to the existing context. Therefore, a final scheme shows a C-shaped layout with spaces arranged in cluster organization. This is because spaces that arranged as fluid as possible can respond better to this elderly center that mainly serves community purpose and the surrounding with sport facilities. Users can experience different spaces with convenient accessibility.

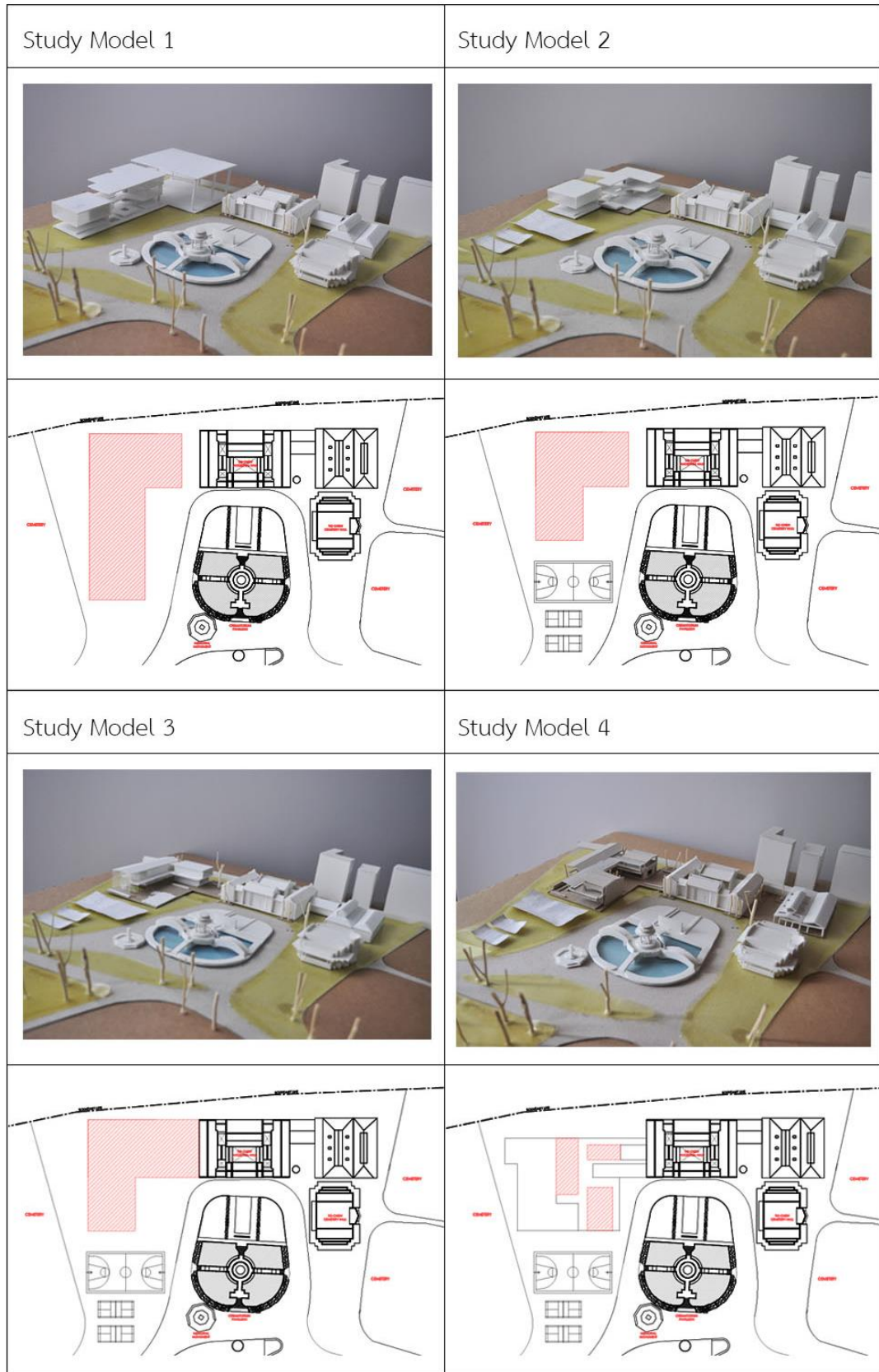


Figure 6. 12 Design development.

The elderly center is positioned by following the axis formed by existing buildings. As shown in Figure 6.13, the existing sports facilities are maintained and re-organized based on new spatial planning.

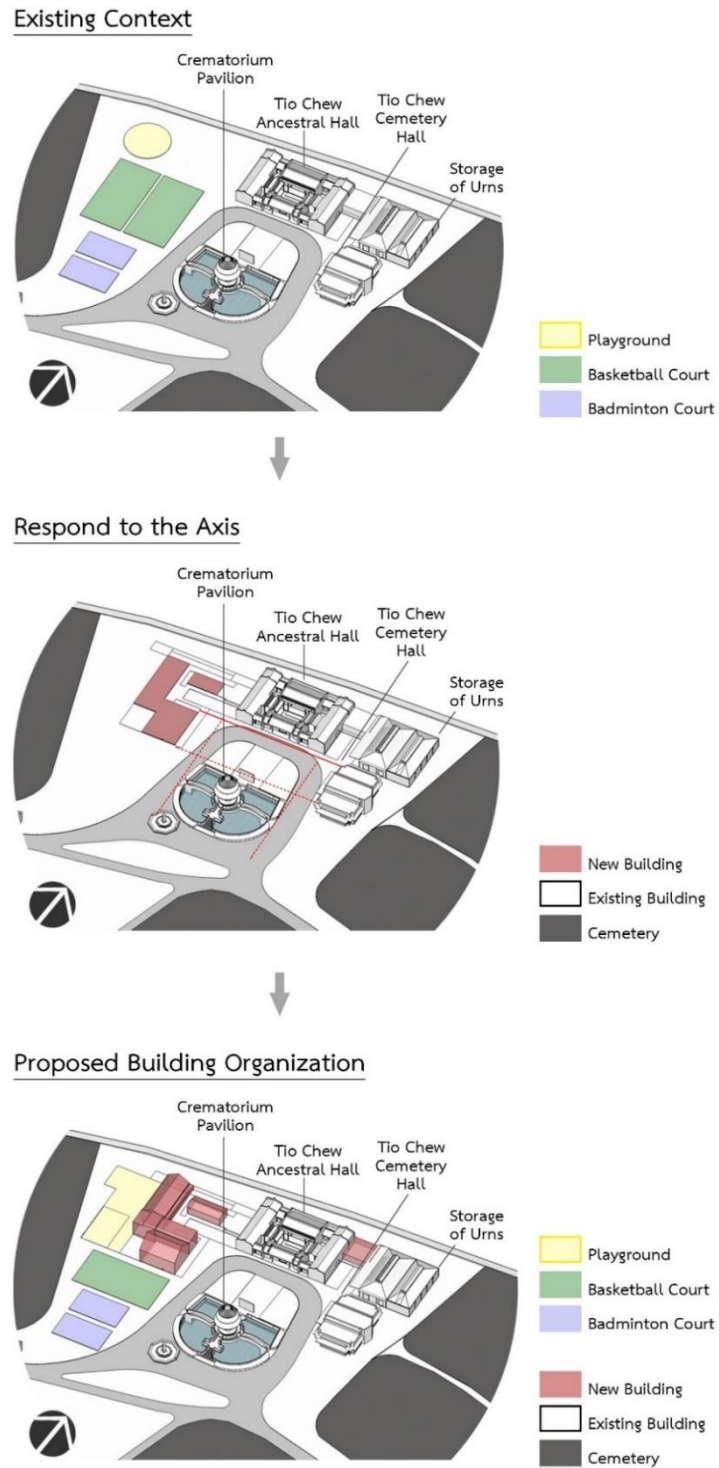


Figure 6. 13 Spatial planning.

### 6.5.2 Building Form

Further, building form also tested by study models (see Figure 6.14). The neighbor building, Tio Chew Ancestral Hall with its traditional Chinese roof, gives a dominant appearance especially located at central axis facing to another dominant structure, the Crematorium Pavilion. This inspired the approach of juxtaposition that imitate the similar gable roof form of the ancestral hall to the new building (see Figure 6.14). The joinery system of traditional Chinese roof, “Dougong” are adapted with contemporary construction method and materials. By “respecting” the existing buildings, the new design imitates the existing roof form and present a “humble” expression adjacent to them.



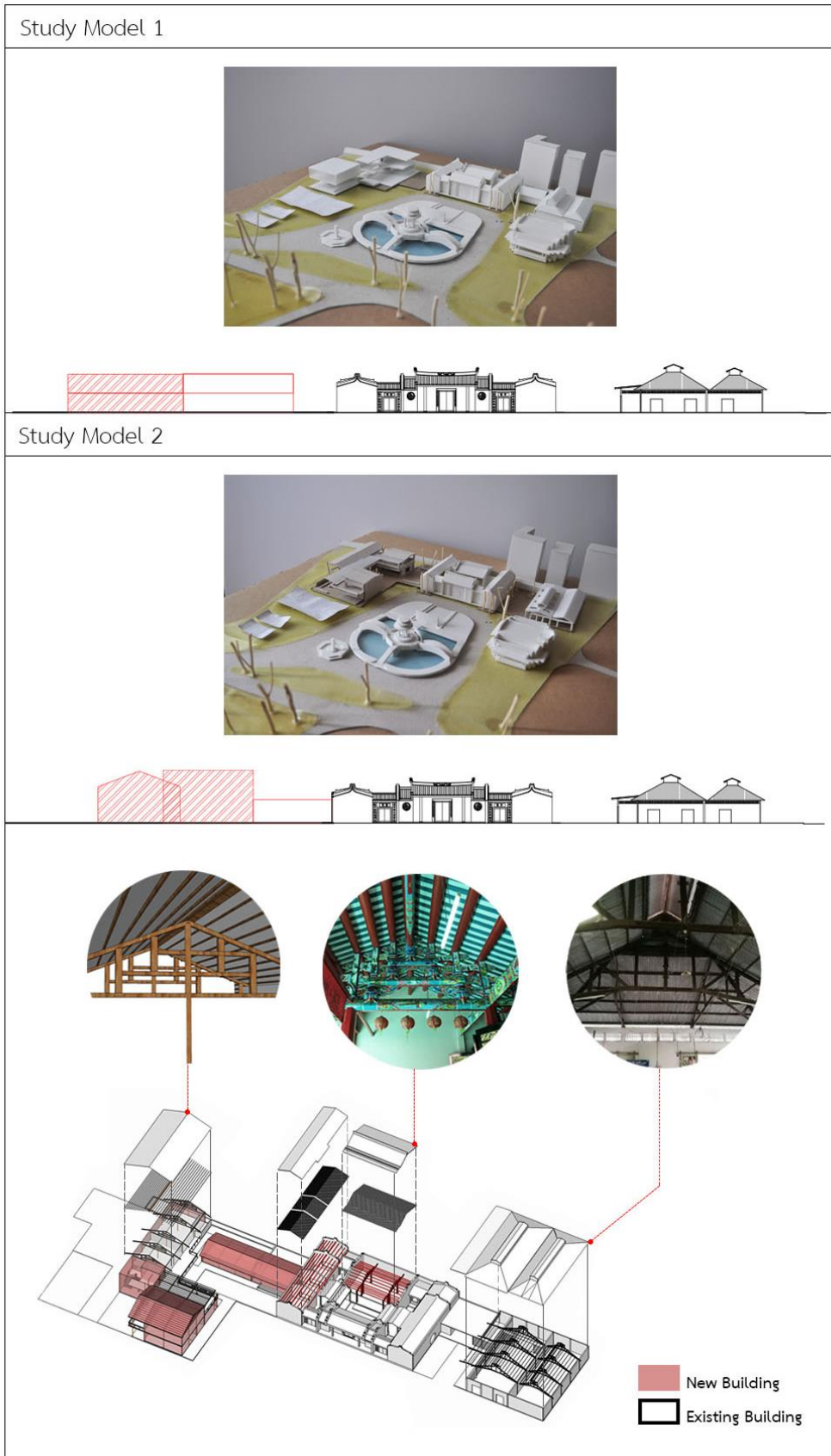


Figure 6. 14 Design development.

### 6.5.3 Circulation

The C-shaped layout also arranged to ease the accessibility especially for elderly and disabled groups. Existing activities including jogging, basketball, badminton and other leisure activities are carrying out in the central part of the cemetery, which define the circular road around the Crematorium pavilion as the main access.

Locating in the active zone, the elderly center provides two access from the circular road (see Figure 6.15). There is no main entrance in this elderly center due to the cluster organization. Each room can be reached through their own entrances. Hence, courtyard becomes important transition spaces between internal and external spaces. Besides, a lift core and a staircase positioned on the south wing are provided to reach the second floor. Verandahs serves as the circulation on second floor.

Further, two secondary access are provided on the West and East wings of Tio Chew Ancestral Hall in which the West wing's entrance is opened to the new addition whereas the East wing's entrance is linked faced to the storage for urns.

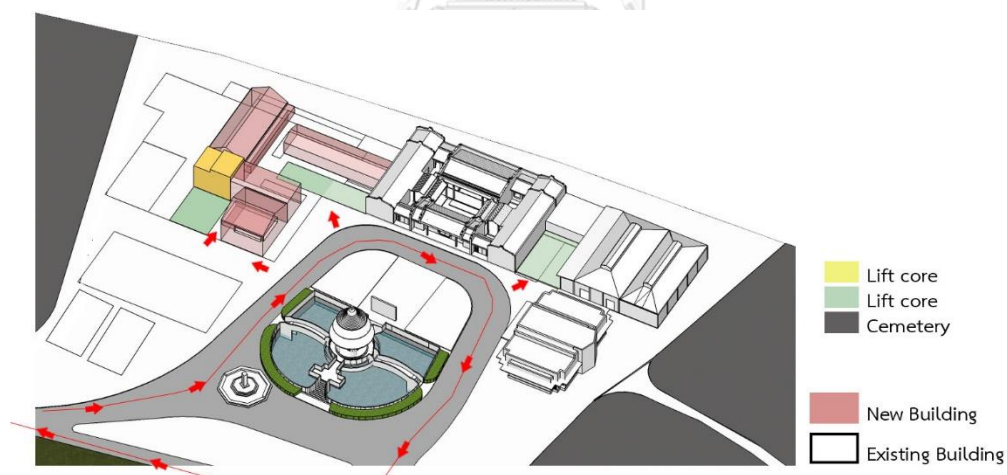


Figure 6. 15 Diagram showing circulation.

## 6.5.4 Spatial Connectivity

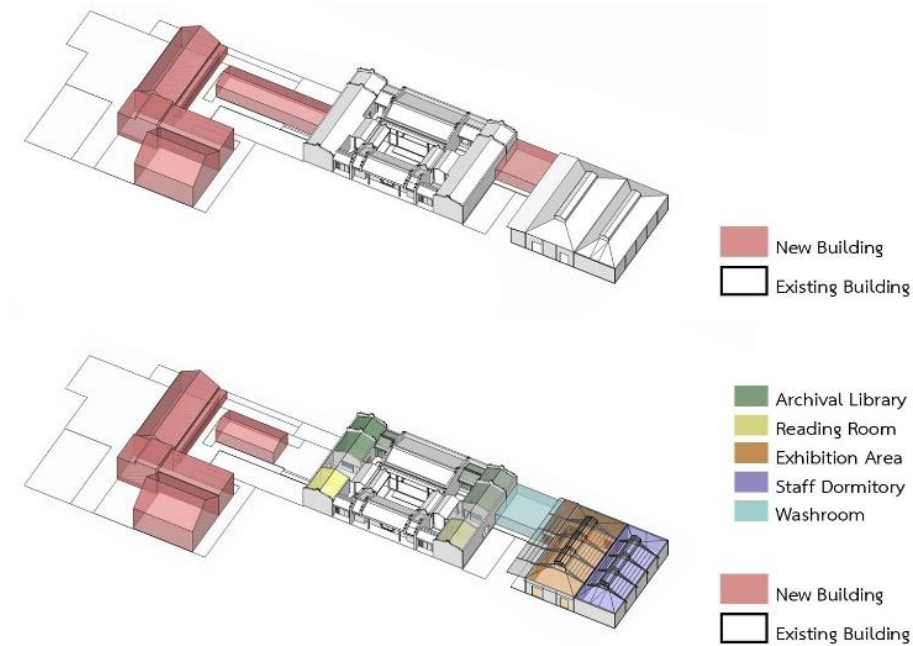


Figure 6. 16 Diagram showing new addition and adaptive reuse.

The C-shaped layout is presented as new addition while adaptive reuse is applied in Tio Chew Ancestral Hall and the building for the storage of urns. By maintaining the existing structures, both existing buildings are re-planned by inserting new functions, namely an archival library, exhibition areas, and a staff dormitory, which are discussed in the following (see Figure 6.16).

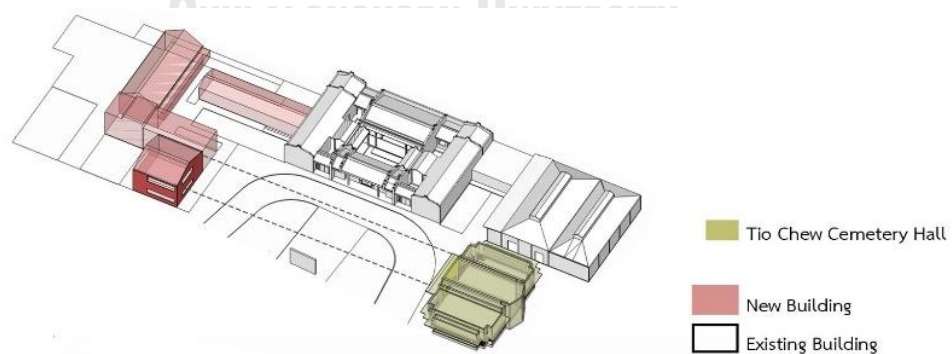


Figure 6. 17 Diagram showing spatial connectivity through openings.

Second, connectivity between the new and existing buildings is created with the placement of openings. The main building is designed with the opening facing toward Tio Chew Cemetery Hall and the Crematorium Pavilion (see Figure 6.17). This is done to create dialogue between the old and new structures. Users can admire the old building and the surroundings from different angles and perspectives.

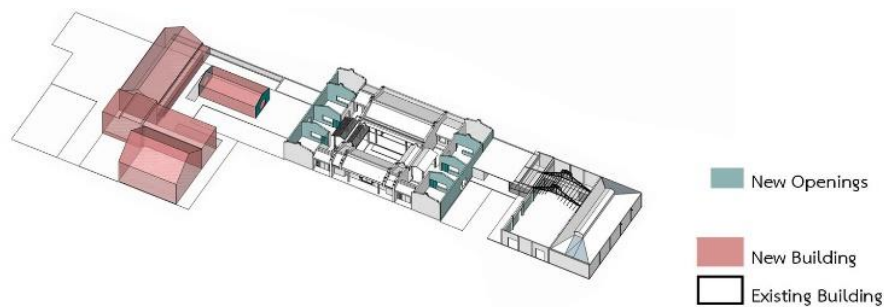


Figure 6.18 Diagram showing spatial connectivity through openings.

Further, new openings are placed in consideration of the space functions and linkages from inside to outside. The Chinese moon gates are applied in both new and existing building as a way of adaptation (see Figure 6.18).

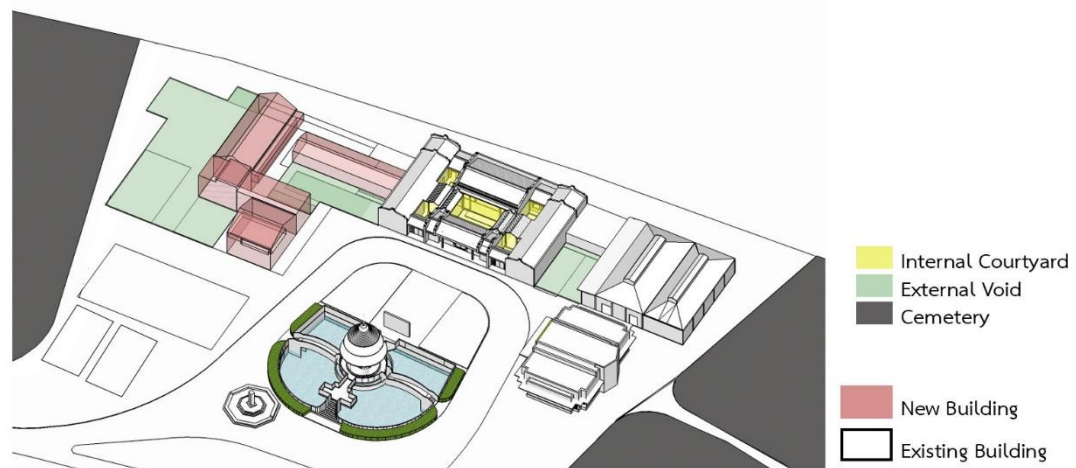


Figure 6.19 Diagram showing internal and external space quality.

The design also gives the internal and external space connectivity through the internal courtyard and external open spaces. An ideal distance between buildings and cemeteries is planned to avoid distraction on the tombstones. (see Figure 6.19).



## 6.6 Programs

## New Addition

Programmes	Spaces	Quantity	Floor	Purposes	Area (sq.m)	Subtotal Area (sq.m)
Elderly (Cultural Activities & Recreation Areas)	Tea Room	1	F1	Community entertainment	70	70
	Entertainment Room	1	F1	Community entertainment especially for TV and Karaoke display	55	55
	Library	2	F1, F2	Leisure reading area.	67	134
	Discussion Room	1	F1	Discussion and study area.	76	76
	Co-Working Space	1	F1	Study area	100	100
	Courtyard/ Sitting Area	1	F1	Community entertainment especially for Chinese Chess	184	184
	Playground	1	F1	Children entertainment	545	545
					<b>Total Area (sq.m)</b>	<b>1164</b>

Administration	Office	1	F1	Information center and administration affair	49	49
					<b>Total Area (sq.m)</b>	<b>49</b>

Commercial	Restaurant	1	F1	Food and beverage	71	71
	Kitchen	1	F1		19	19
	Services	1	F1		8.8	8.8
					<b>Total Area (sq.m)</b>	<b>98.8</b>

Services	Lift and Stairase	1	F1, F2	Accessibility	36.6	73.2
	Washrooms (Male & Female)	1	F1	Services	34	68
	Washrooms (Male & Female)	1	F2		12	12
					<b>Total Area (sq.m)</b>	<b>153.2</b>

<b>Total Built-up Area (sq.m)</b>	<b>1465</b>
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\* Programs are drawn from the author's observations and informal interviews with the users in Tio Chew Cemetery.

Table 6. 1 Table of programs (Part 1).

As Tio Chew Cemetery Park is well-equipped with sports facilities, the overall programs proposed for the elderly center are focused more on static activities. This is because the elderly who spend most of their time (with some even spending the whole day) in the cemetery park can benefit from alternative activities and entertainment. Therefore, the design programs are proposed with the consideration of existing activities and new functions based on their requirements.

#### Tea room and Entertainment room

Based on observations, the elderly who use the cemetery park often spend a great deal of time under temporary structures for Chinese chess, karaoke, and chit-chat sessions. Although these temporary structures were built without a proper plan and were not agree to by Tio Chew Association, they serve as a preferred resting spot for most visitors because they provide good shade and ventilation. In response to this issue, a tea room equipped with light cooking facilities and an entertainment room to allow video and tv displays are proposed for the elderly center to create a better environment for entertainment.

#### Library

While the elderly center is aimed at providing more possibilities and alternative uses for the cemetery park, the design includes a library for the provision of reading resources. This will benefit visitors by providing them with a reading area while at the same time fostering interaction between the old and young generation through sharing and teaching sessions.

#### Activity Rooms for Cultural Activities

Furthermore, the design, which is intended to relate the past to the present, is achieved by proposing Chinese cultural activities which were performed by Tio Chew Association in the past. Hence, studios for Chinese calligraphy, singing, and painting classes, are proposed in the elderly center.

### Co-working Space

In addition, new functions such as co-working space are also proposed for the elderly center to respond to contemporary needs. The cemetery park, with sufficient greenery, clean air, and open areas, may be an ideal place for students or freelancers to perform their work.

### Courtyard and Sitting Area

Further, the external courtyard will serve as a transition space between adjacent rooms and more importantly, as a seating area for Chinese Chess activities. This is a response to the internal courtyards of Tio Chew Ancestral Hall and is applied as an external courtyard to suit the context as an outdoor recreation area.

### Café

A café that serves beverage, coffee and simple Thai food is necessary for this recreation spot. Visitors will be welcomed to the elderly center, enjoy sports sessions and food.

## Adaptive Reuse : Tio Chew Ancestral Hall

Programmes	Spaces	Quantity	Floor	Purposes	Area (sq.m)	Subtotal Area (sq.m)
Information & Exhibition	Archival Library	1	F1	Archival reseources of Tio Chew Association and Tio Chew Cemetery Park	98	98
	Librarian Office	1		Reading area	16.6	16.6
	Museum	1		Display the history of Tio Chew Cemetery Hall.	114	114
					<b>Total Area (sq.m)</b>	<b>228.6</b>

## Adaptive Reuse : Storage for Urns

Programmes	Spaces	Quantity	Floor	Purposes	Area (sq.m)	Subtotal Area (sq.m)
Exisiting Usages	Temporary Exhibition Area	1	F1	For temporary exhibition and events	169	169
	Storage of urns	1		Storage of urns	44.5	44.5
	Tool Storage	1		Tool storage	44	44
	Staff Dormitory	1		One family living area	180	180
	Washroom (Male and Female)	1		Services	68	68
					<b>Total Area</b>	<b>505.5</b>

<b>Total Reused Area (sq.m)</b>	<b>734</b>
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\* Programs are drawn from the author's observations and existing condition of Tio Chew Ancestral Hall and the building for the storage for urns.

Table 6. 2 Table of programs (Part 2).

On the other hand, by outlining the possibilities of space uses and structural systems of Tio Chew Ancestral Hall and the building for the storage of urns, the design applies adaptive reuse to improve the usage of space and create spatial connectivity between the new building and existing buildings.

## Adaptive Reuse of Tio Chew Ancestral Hall

### Archival Library and Museum

As discussed in Chapter 4, Tio Chew Ancestral Hall currently has ancestral altars in the main hall. The other rooms on the adjacent sides are empty but in good condition. As a result, by following the room layout and structural system, an archival library is proposed for the West wing with a museum for the East wing. Both the archival library and museum are provided as an extra platform for historical exposure.

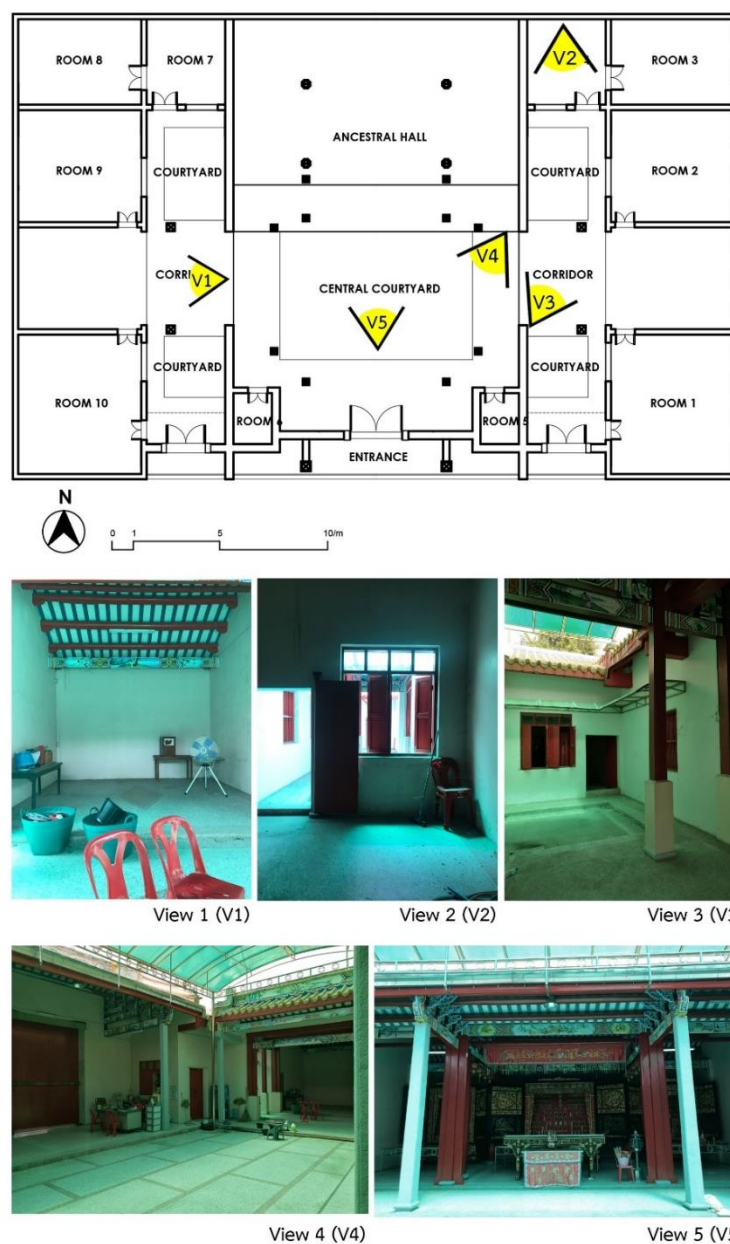


Figure 6. 20 Current condition of Tio Chew Ancestral Hall.

## Adaptive Reuse of the Building Storage of Urns

### Temporary Exhibition Room, the Storage of Urns, and a Staff Dormitory

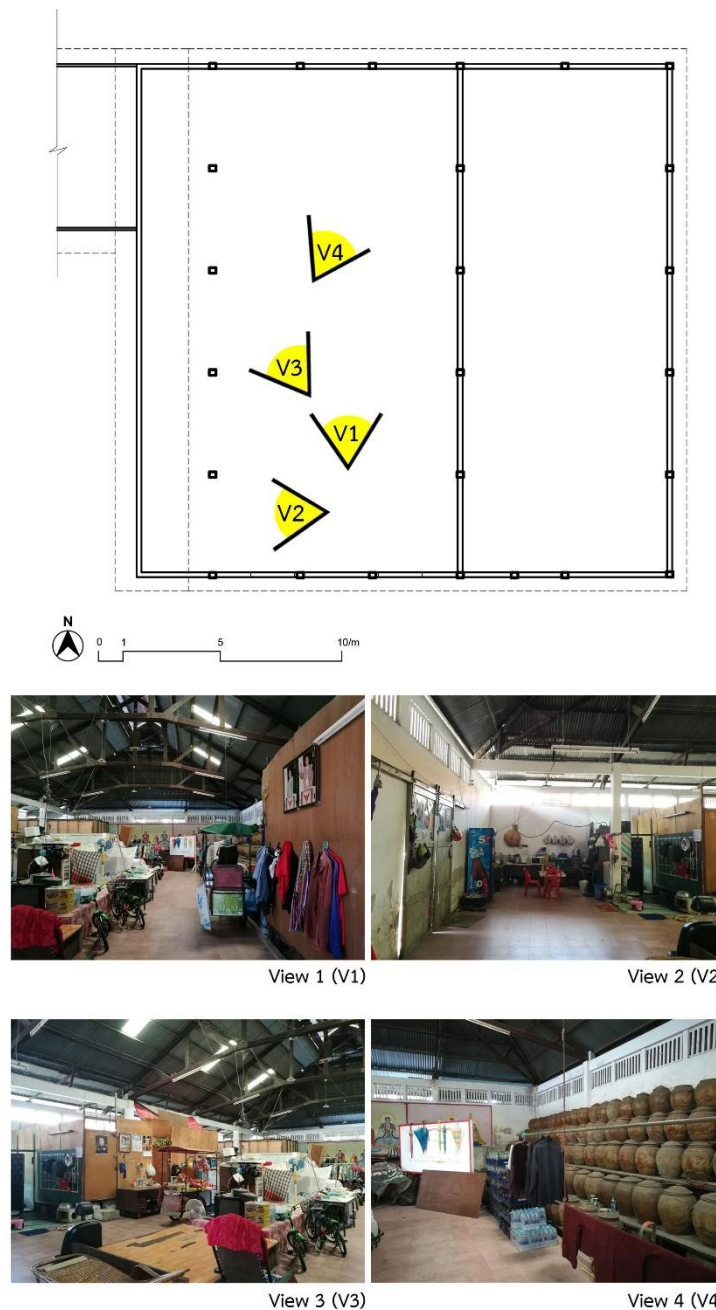
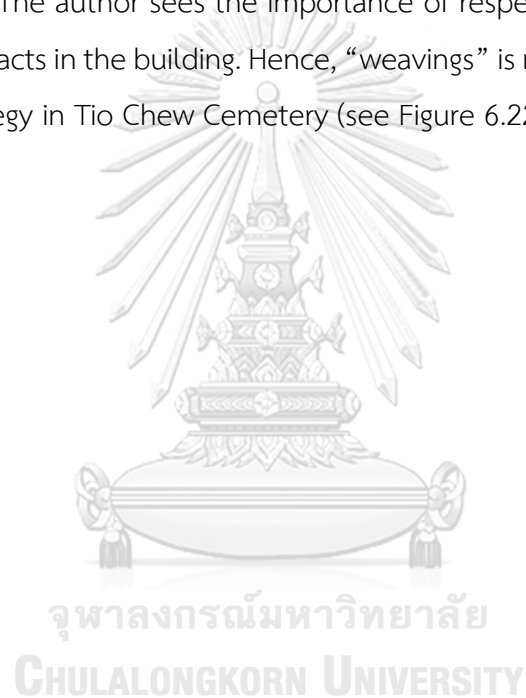


Figure 6. 21 Current condition of storage for urns.

The building for the storage of urns, which is improperly used for storage of urns, with scattered rooms for a family living in the building as well as tool storage, will be re-planned by following the existing primary structures. An exhibition room is

proposed to hold temporary exhibitions and other events. It is designed to be like the museum in Tio Chew Ancestral Hall to create better spatial connectivity for exhibition purposes. However, storage for urns and tool storage are re-positioned based on the required area and accessibility. However, the family's living space is re-planned for the east side of the building.

In sum, by considering the structural condition of both Tio Chew Ancestral Hall and the storage for urns, the strategy of “weaving” applied in different way where attention is paid more on the addition of new building while less alteration in the two existing buildings. The author sees the importance of respecting the context by giving less structural impacts in the building. Hence, “weavings” is reinterpreted by the author as a suitable strategy in Tio Chew Cemetery (see Figure 6.22).



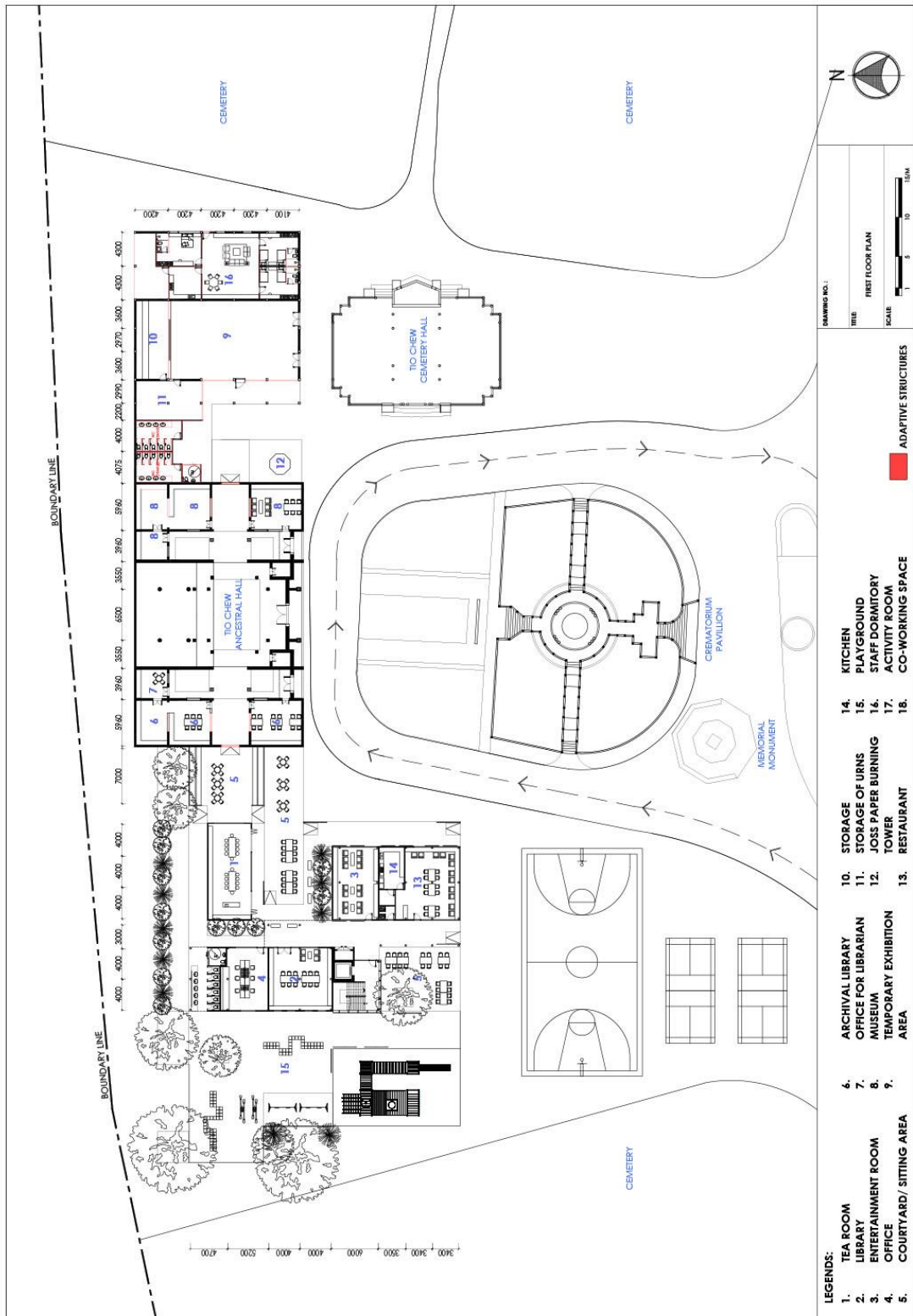


Figure 6. 22 First floor plan indicating the new addition and adaptive reuse.



## 6.7 Building Materials

The main building materials proposed in this elderly center is reinforced concrete for foundation, flooring and wall systems while timber as the overall structural material (see Figure 6.23). As one of the design idea is to adapt the tradition Chinese roof, “*Dougong*”, the timber columns and beams are exposed to see the joinery system while concrete walls served as the enclosure and partitions. Shingles as the roofing material.

Further, to respond to the idea of creating more fluid and open layout, transparent materials including glass and perforated sheets are applied in most of the spaces. Besides, by considering acoustic control and the need of air-conditioning system, spaces such as library, office, activity rooms and co-working space are designed with fixed glass doors and windows. However, the openings with perforated sheet are applied in spaces that designed to have natural ventilation.

In addition, other external elements such as the seating on the upper floor used timber while the concrete benches are proposed on the lower floor. Lastly, railings are proposed with aluminum frame with wire mesh panels.



Figure 6. 23 Sectional perspective showing building materials.

## 6.8 Design for Access and Mobility

### 1. Horizontal Access

The elderly center fulfills the accessibility requirement for the elderly and disabled (see Figure 6.24). First, all passageway and corridors are provided with at least 120 centimeters wide within buildings while the external corridors are 150 centimeters wide. Second, the proposed concrete floor is slip-resistant, accessible for wheelchair and firm.

### 2. Vertical Access

In terms of vertical access, a lift, staircase and ramps are provided in this elderly center. First, a lift and a staircase are positioned in the central point of all spaces, with the shortest distance to reach each room on the upper floor. It is convenient for the elderly and wheelchair users. Standard dimensions for lift is referred and the requirement of control panels and handrails are fulfilled.

Next, in terms of staircase, 180-centimeter-wide of spaces for movement are proposed on the landing. The tread is designed with tactile material with a change of surface texture on the treads, corridors and landings, to make sufficiently safe for the users. Also, a height of 85 centimeters handrails with a diameter of 4 centimeters are fitted on both sides.

Further, ramps also provided in areas that have level changed. The slope ratio of 1:12 is applied for all ramps. The spaces for movement is 150 x 150 centimeters at the start and end of the ramp. In addition, a height of 85 centimeters with handrails 4 centimeters in diameter are fitted on one side of the ramp and half-landing.

### 3. Water Closet

Water closet for disabled also provided with the standard requirement. For example, the space for movement inside the toilet is 150 centimeters wide. On one side of the toilet bowl, a distance of at least 30 centimeters to the wall and other fittings also provided. Further, the seating height of the toilet bowl is 48 centimeters with handrails on both sides.

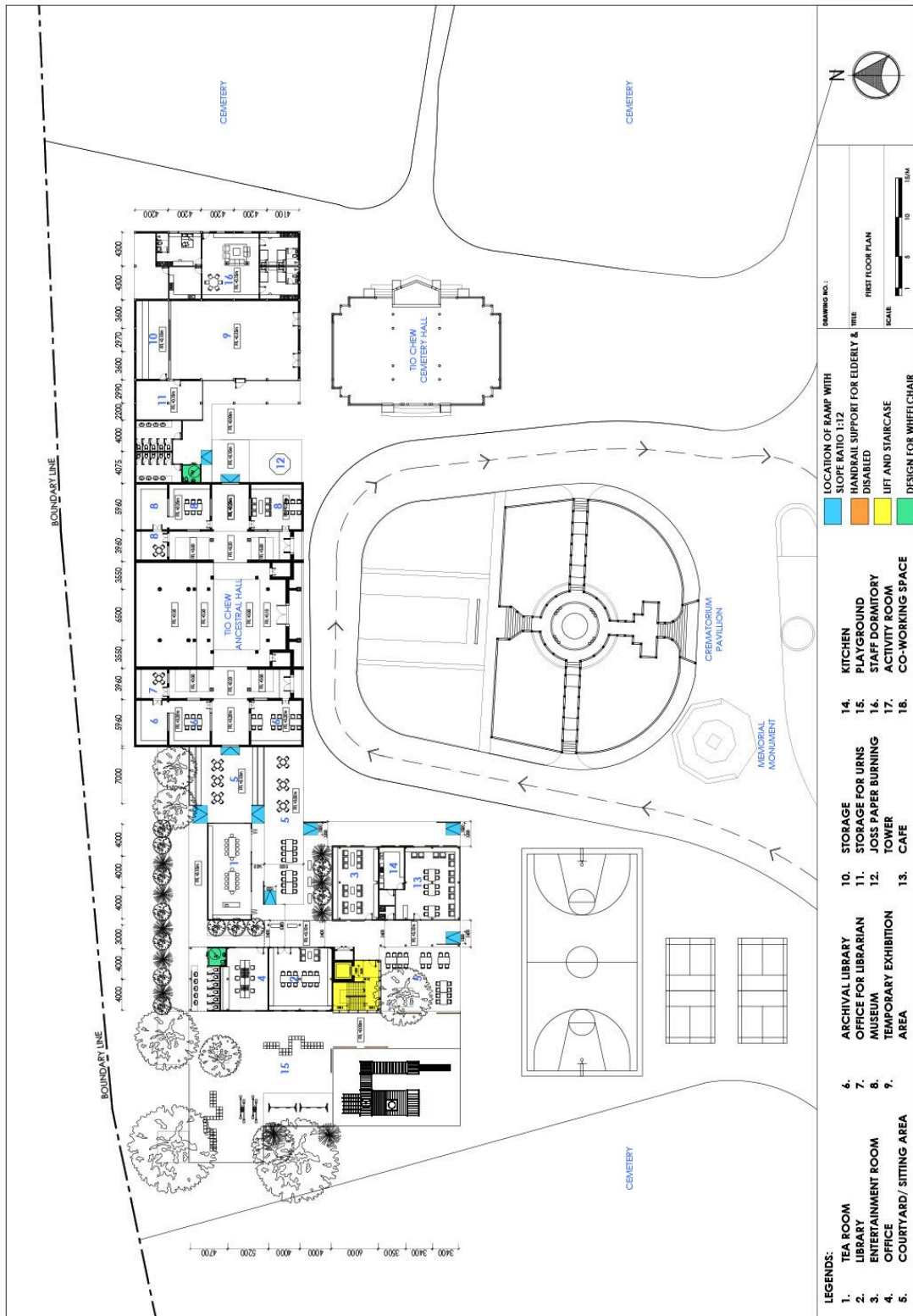


Figure 6. 24 Accessibility requirements for the elderly and disabled.

6.9 Design Drawings



Figure 6. 25 Site plan.

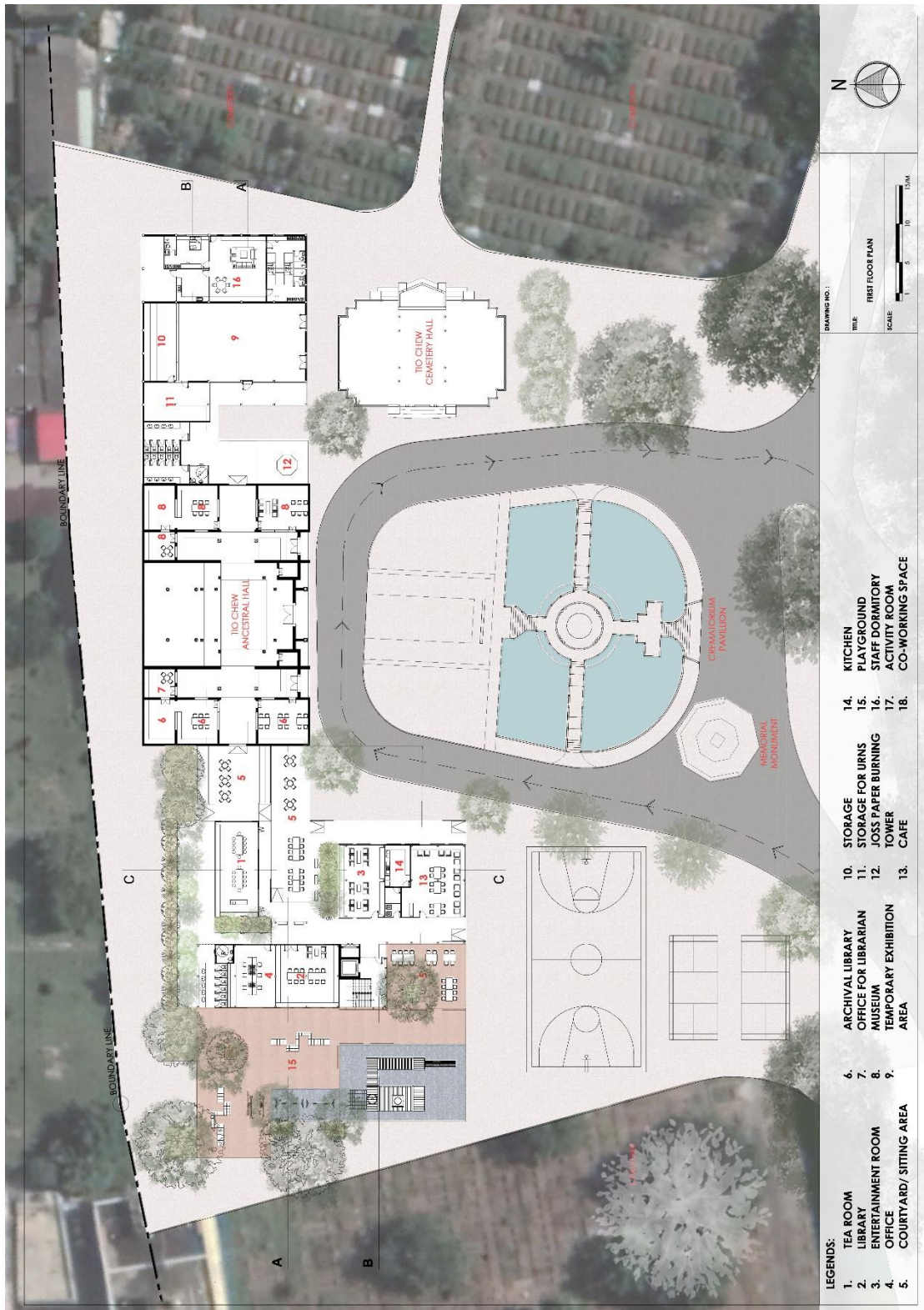


Figure 6. 26 First floor plan.

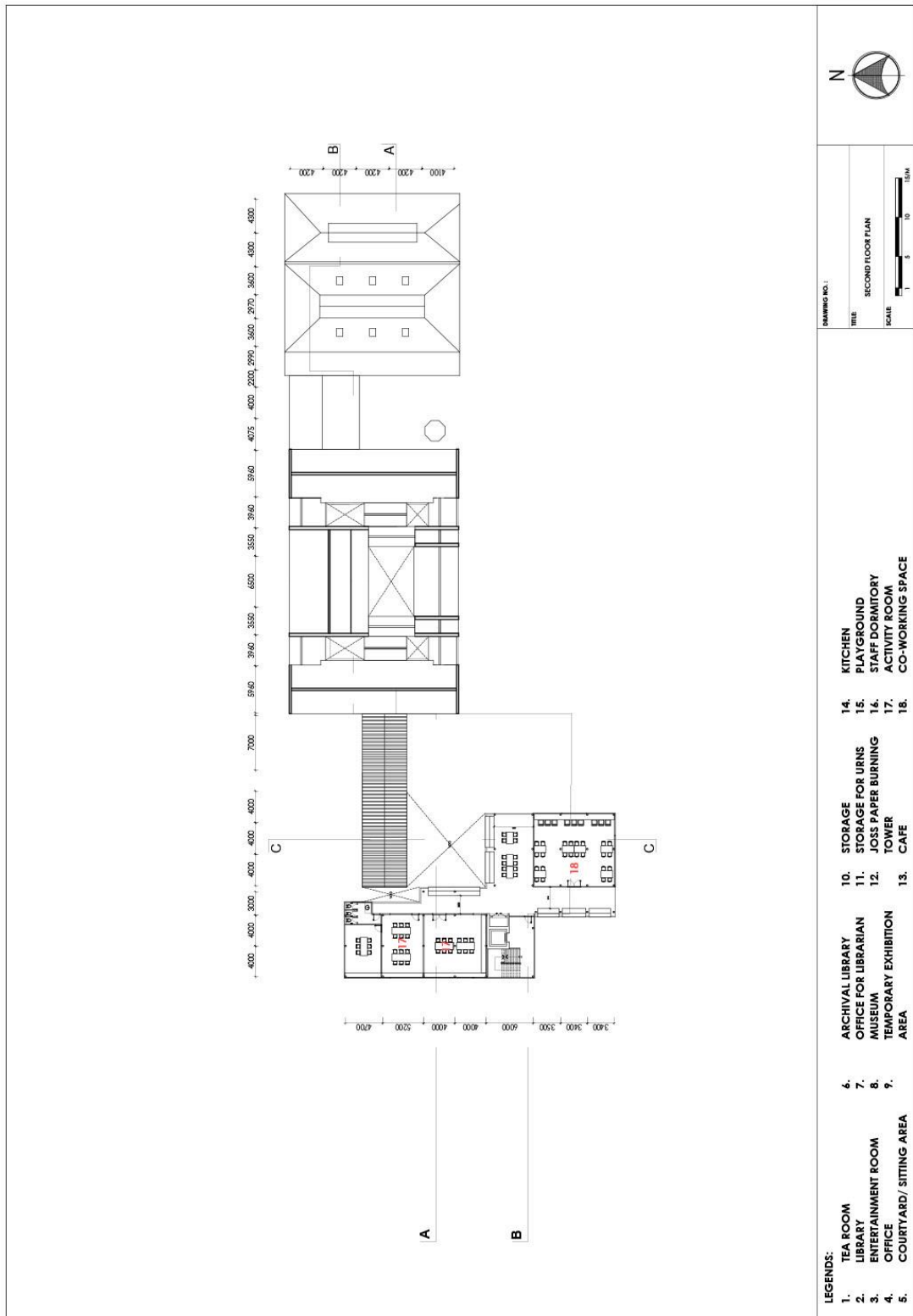


Figure 6. 27 Second floor plan.

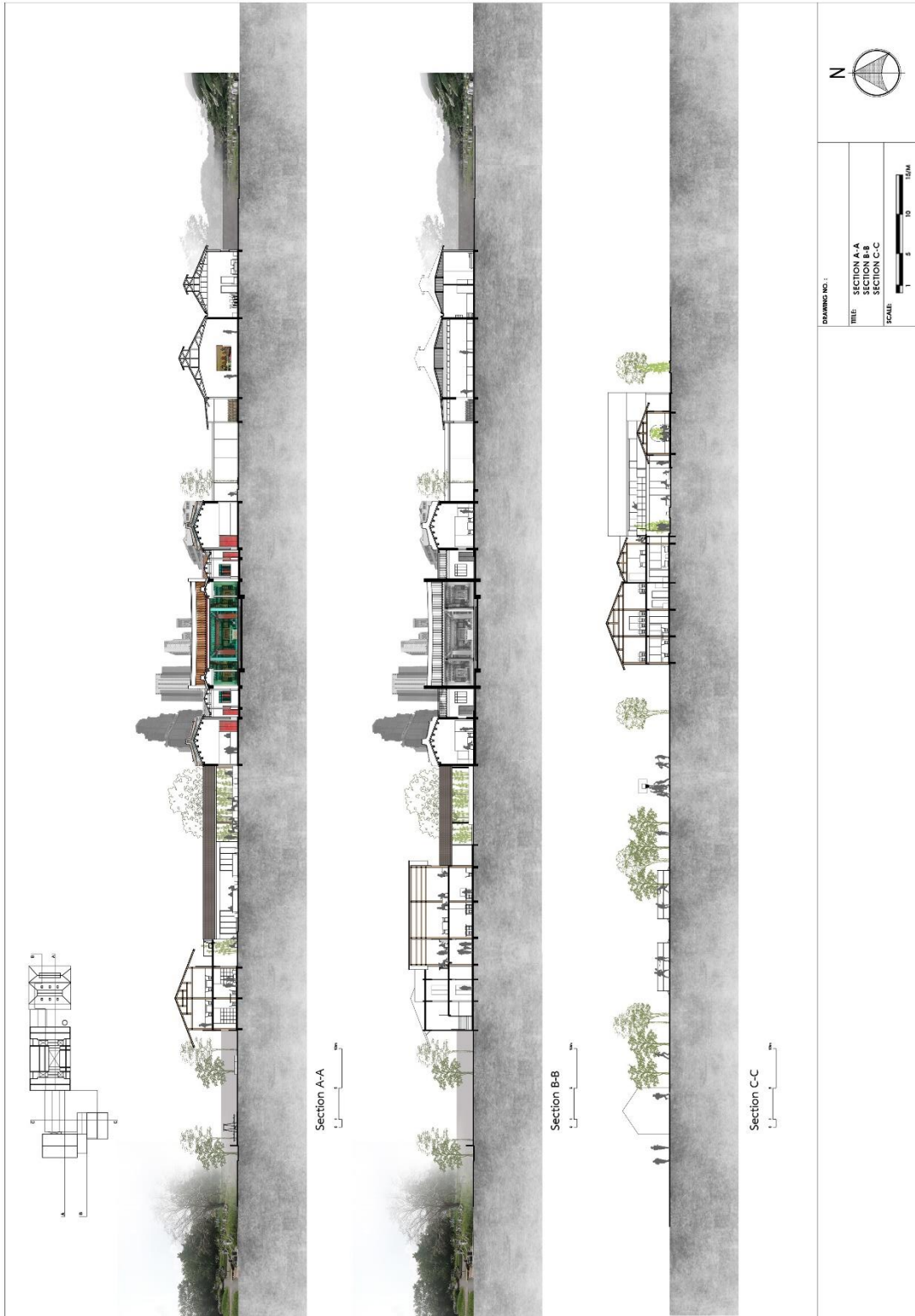


Figure 6. 28 Section drawings.





Figure 6. 29 West Elevation and South Elevation.

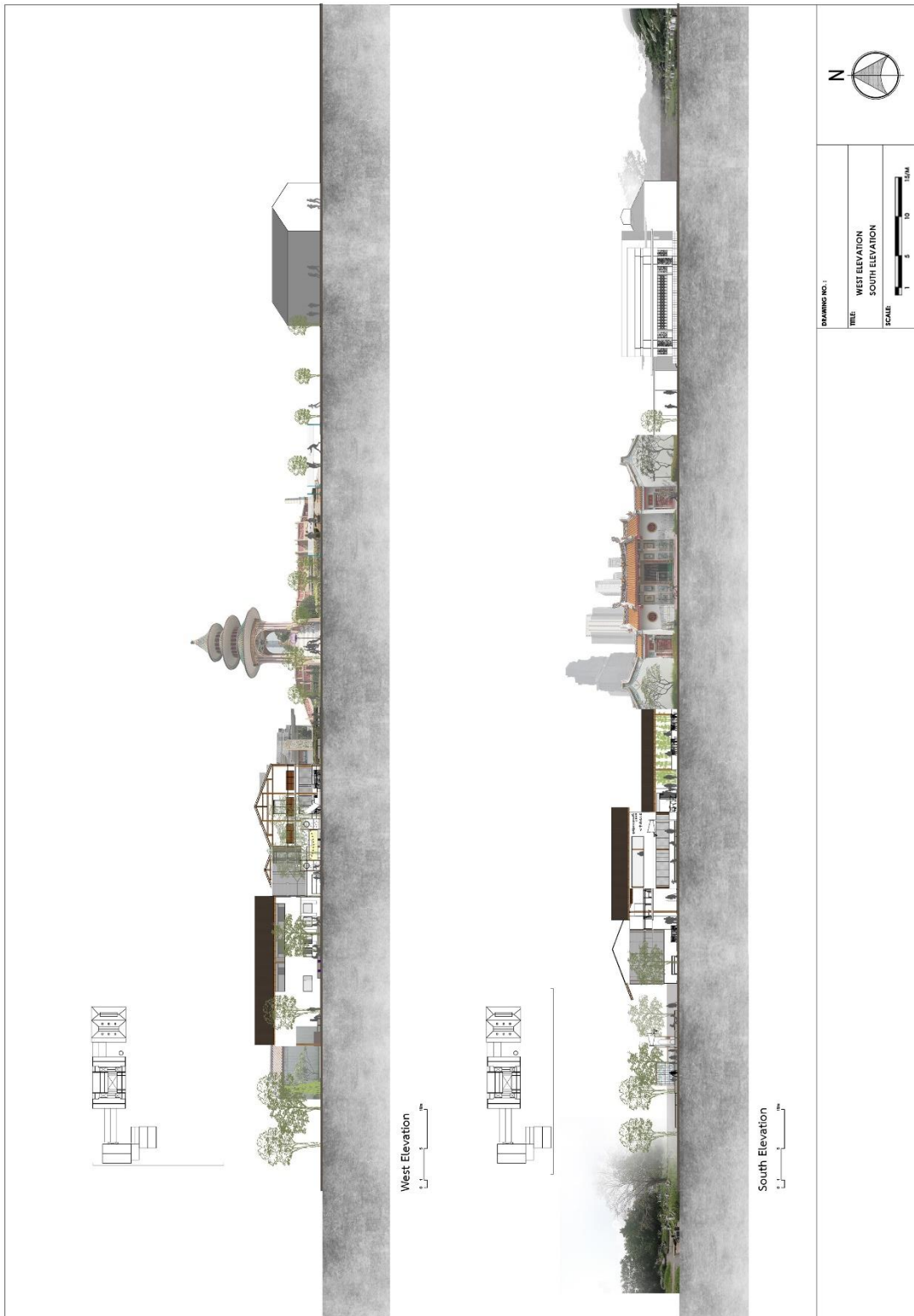


Figure 6. 30 North Elevation and East Elevation.



Figure 6. 31 The courtyard.



Figure 6. 32 Elderly center.



Figure 6. 33 Archival library in Tio Chew Ancestral Hall.



Figure 6. 34 The seating area at the verandah.



Figure 6. 35 The tea room.



Figure 6. 36 Temporary exhibition area in the warehouse storage for urns.



Figure 6. 37 Bird's eye view of Tio Chew Elderly Center.



6.10 Final Model

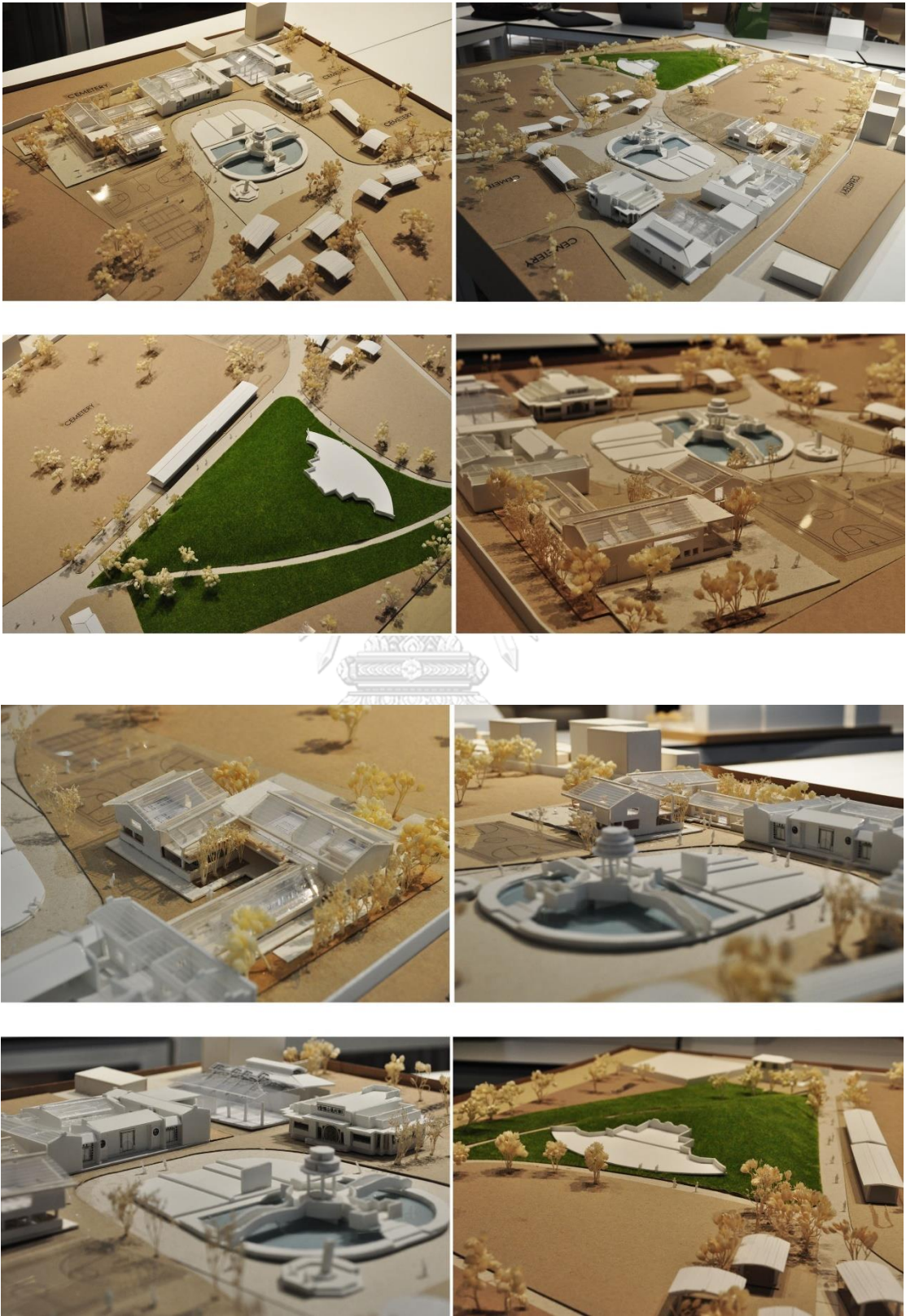


Figure 6. 38 Final model.



Figure 6. 39 Sectional model.



## CHAPTER 7

### CONCLUSION

In sum, Tio Chew Cemetery is presented as an alternative case for addressing the nature of historical sites under the threats of new urban development in the city. Unlike the other cemeteries, Tio Chew Cemetery encountered a different fate as it is not threatened by demolition, closure, or even relocation. Instead, the partial change of the cemetery to a recreation area is a unique urban phenomenon and allowed it to become an important leisure spot for people especially residents of the surrounding areas. This positive outcome was possible through the efforts of the government, and Tio Chew Association as well as public involvement in preserving this historical site.

In the first half of this thesis, the research begins with the introduction of Chinese associations particularly Tio Chew Association. The establishment and historical background to the roles these associations played in Thai society are explained. As discussed in Chapter 3, Tio Chew Association was established with the vision of providing mutual-aid assistance and welfare services to society through both tangible and intangible approaches. Architectural aspects are presented through the construction of schools, medical centers, shrines and cemeteries as the physical contributions. These serve as the first perspective for comprehending the association's role of providing welfare services, which was projected on Tio Chew Cemetery. In relation to the current condition of Tio Chew Cemetery, the action of partially turning it into a public recreation area further explains the original roles and vision upheld by Tio Chew Association.

Next, existing studies include the historical development and architectural analysis of Tio Chew Cemetery and the existing old buildings shown in Chapter 4. From an agricultural field to a burial ground over a century, Tio Chew Cemetery has undergone several stages of development and witnessed the city's development through the increasing number of buildings and infrastructure in the surrounding area. It represents the largest open space in Sathorn district as the surrounding areas have

gradually become densely developed. It also demonstrates the issue of a lack of open space in the area, which means Tio Chew Cemetery Park is an important recreation area with frequent visits from the nearby residents.

Further, the development of Tio Chew Cemetery is characterized by old buildings built in different periods and of varied appearances, function, and building organization. Through oral history, field observation and measure work, the architectural analysis presents the buildings' unique characters. All the buildings are closely tied together based on the spatial planning, building elements, Chinese beliefs regarding *Feng Shui*. Therefore, they serve as important physical "evidence" that reveals the historical importance and cultural significance regarding death and burial practices of Tio Chew descendants in the past.

With an understanding of the historical accounts and cultural meanings of Tio Chew Cemetery and the existing buildings, the second half of this thesis presents a design of an elderly center mainly based on the author's analysis, current site issues and contemporary needs in the cemetery.

To meet these needs, the design is centered on the idea of responding to the context through the design approach of a new extension and adaptive reuse of existing buildings. The author considers the current recreation activities in the cemetery as advantages of the site, with more opportunities and possibilities produced through a new building design. To provide an alternative use of the cemetery, static activities or programs are proposed as an ideal combination with the existing sports activities. The elderly who are the major visitors are the target users. Further, the design also proposed adaptive reuse of two existing buildings by inserting new functions such as an archival library and permanent and temporary exhibition areas. This is to improve improper and unused spaces while at the same time enhancing the old buildings, so they can respond to contemporary needs and context.

The design seeks to extend the opportunities of Tio Chew cemetery park by providing alternative programs and spaces. The elderly center is designed not only to benefit the elderly but also to encourage the participation of younger generations through new programs and activities. The design responded to the vision of Tio Chew

association to provide welfare services and propose possibilities to suit the present and future needs of Tio Chew Cemetery.

### 7.1 Limitations and Suggestions for Future Study

This thesis was completed with major references of archival resources from Tio Chew Association's commemorative anniversary publications. These are useful when the available resources are in Chinese, which affords the author a better understanding of the relevant information. However, the archival sources are mainly composed historical records and lack of architectural accounts. Therefore, the architectural analysis is limited to the author's observations, interviews, and measure works. Further, the Thai proficiency of the author is also a limitation for this thesis. This thesis would be deeper with more references from Thai literatures with a better understanding of the Thai language.

Therefore, several suggestions are proposed, especially for the research:

1. More archival studies from Thai resources to obtain more concrete and informative data especially in terms of architecture aspects.
2. More formal interviews with the users of Tio Chew Cemetery Park to understand more deeply the contemporary needs and thus helps the program designs.

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