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South China University of Technology



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Research on Urban Ground

of Chung Ying Street, Sha Tau Kok

作者姓名	刘思仪
学位类别	建筑学硕士
指导教师	导师组
所在学院	建筑学院
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Research on Urban Ground of Chung Ying Street, Sha Tau Kok

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Candidate: LIU Siyi

Supervisor: SCUT-PoliTO co-supervisors

South China University of Technology
Guangzhou, China

摘 要

在城市发展的高质量阶段，城市品质与体验变得尤为重要。本文的目标是深入研究深圳沙头角中英街地面（特指城市环境中的地面空间“Urban Ground”），重点关注行人视线水平面的横向城市空间，揭示了地面是决定城市体验的关键要素。地面是承载公共活动和城市要素的基准面，也是在城市区域内人性化尺度体验与感受的一种真实的城市空间。地面，作为城市空间的基础构成部分，对提升城市或街区的品质和体验感起着至关重要的作用，澳大利亚黄金海岸市专门出版了城市地面设计导则，而我国鲜少有专门研究。

沙头角中英街跨越深港两地，1898 年刻立的界碑立于街中心，将沙头角一分为二，东侧为华界沙头角，西侧为英(港)界沙头角，故名“中英街”。中英街的独特之处在于它的一街两制，同时是一国两制的缩影，被人们称为“特区中的特区”，曾一度繁华，但在多次社会变革之后，亟需进行优化与转型。本文对中英街的研究并不仅限于中英街本身，广义上指的是港侧中英街以及深圳沙头角海关关口以南中英街以东这一区域。

中英街地面演变反映了沙头角地区人文历史的变化，具有重要的历史文化价值；但地面现状存在的问题突出，步行连续性“断裂”、无障碍较为缺乏、地面所承载的功能较为纷乱等等。所以，中英街地面值得深度研究，有利于未来转型、提升街区体验感与品质。

本文的第一章绪论对研究的地面进行了详细的定义，并指出了中英街地面现状概况，提出研究问题。同时，引入了图底关系理论和城市体验的相关理论作为启发，明确优化与改造的愿景。第二章是关于地面元素和场地体验感的调研，通过制作诺利型地图、分类绘制不同空间界面，同时进行了问卷调查和访谈；根据调研成果梳理总结场地问题。第三章通过对多个经典案例的研究，对应场地问题，生成了 3 个层面的策略和具体的操作手段。第四章将设计策略与操作方法应用到中英街场地上，根据具体场地进行了针对地面的设计实践。

本论文的研究成果：通过现场调研详细记录了中英街的地面要素，绘制了中英街的“诺利地图”和空间界面分类图，根据图底关系和城市体验的相关理论对现状进行了分析；结合黄金海岸城市地面设计指南等案例的研究，提出设计愿景和策略，完成了整体概念设计和主要节点的改造方案。

关键词：中英街；地面；城市地面；空白；空间界面；城市体验

ABSTRACT

In the phase of high-quality urban development, urban quality and experience become particularly crucial. This study aims to conduct an in-depth study of the urban ground. It specifically focuses on the horizontal part of the city, which is at eye level. This study seeks to reveal that the urban ground is a key element in shaping the urban experience. The urban ground serves as the foundational plane that supports public activities and urban elements. It represents a tangible urban space where human-scale experiences and sensations occur within city districts. The ground, as an integral component of urban space, plays a pivotal role in enhancing the quality and experiential aspects of a city or neighborhood. While the Gold Coast City in Australia has published Urban Ground Guideline, China has comparatively limited research and publications in this area.

Located at the crossroads of Shenzhen and Hong Kong, Chung Ying Street in Sha Tau Kok has historical significance dating back to 1898 when a boundary marker was erected in its center. This marker divided Sha Tau Kok into two parts: Shenzhen Sha Tau Kok on the east side and British (Hong Kong) controlled Sha Tau Kok on the west side. This division led to its name, "Chung Ying Street.". The distinctive feature of Chung Ying Street lies in its "One Street, Two Systems" status, serving as a microcosm of the "One Country, Two Systems" policy. It has been referred to as a "Special Region within a Special Region." While it thrived at one point, it has undergone several social transformations and is in need of optimization and transformation. The scope of this research extends beyond Chung Ying Street itself and encompasses the broader area, referring to the Hong Kong side of Chung Ying Street and the eastern region of Chung Ying Street in Sha Tau Kok, south of the Shenzhen Sha Tau Kok Customs checkpoint.

The evolution of the ground in Chung Ying Street reflects the changes in the cultural and historical landscape of the Sha Tau Kok region, holding significant historical and cultural value. However, the current condition of the ground is marked by prominent issues such as disruptions in pedestrian continuity, a lack of accessibility considerations, and a somewhat chaotic distribution of functions supported by the ground. Consequently, in-depth research on the ground of Chung Ying Street is warranted, as it can contribute to future transformations and enhance the overall quality and experiential value of the district.

Chapter 1 of this study, the introduction, provides a detailed definition of the urban ground under study. It outlines the current state of the urban ground in Chung Ying Street and presents the research questions. Additionally, it introduces the concept of Figure-Ground

Theory and relevant theories related to urban experiences to provide inspiration and establish a clear vision for optimization and transformation. Chapter 2 focuses on the research of ground elements and site experiential qualities. This involves the creation of the Nolli-type mapping of Chung Ying Street, the categorization of various spatial interfaces, and the use of surveys and interviews. Then, the research results are summarized, and site-related issues are analyzed and synthesized. Chapter 3 delves into the study of multiple classic cases, addressing site-related issues. It generates strategies and specific operational methods across three different levels. Chapter 4 applies the design strategies and operational methods to the Chung Ying Street, conducting site-specific urban ground design practices.

The research outcomes of this study include: a detailed record of the ground elements in Chung Ying Street through on-site investigations, the creation of a "Nolli map" and spatial interface classification chart for Chung Ying Street, an analysis of the current situation based on the theory of figure-ground relationship and urban experience. Drawing upon case studies such as the Gold Coast Urban Ground Guidelines, design visions and strategies were proposed. This culminated in the completion of an overall conceptual design and the renovation plans for typical nodes.

Keywords: Chun Ying Street; Ground; Urban Ground; Voids; Spatial interfaces; Urban Experience

Contents

摘要.....	I
ABSTRACT.....	II
Lists of Figures.....	7
Lists of Tables	10
Chapter 1 Introduction	1
1.1 Topic Explanation.....	1
1.2 Research Origin.....	3
1.2.1 Research Background.....	3
1.2.2 Overview of the Development of Chung Ying Street in Sha Tau Kok.....	4
1.2.3 Overview of the Current Situation of Urban Ground Chung Ying Street	7
1.2.4 Overview of the Survey on Pedestrian Experience in Chung Ying Street	9
1.2.5 Future Orientation of Chung Ying Street in Sha Tau Kok: the Core of Shenzhen-Hong Kong Tourism Consumption Cooperation Zone	10
1.2.6 Research Question.....	12
1.3 Theoretical Inspiration	13
1.3.1 Figure-Ground Theory	13
1.3.2 Urban Experience Related Theories.....	16
1.3.3 The Urban Ground Shapes A Human-scale Urban Experience.....	18
1.4 Research Content and Research Significance	19
1.4.1 Research Content.....	19
1.4.2 Research Scope and Design Scope.....	20
1.4.3 Research Significance	21
1.5 Research Methods and Research Framework	22
1.5.1 Historical Data and Literature Analysis	22
1.5.2 Field Research	22
1.5.3 Case Studies	23
1.5.4 Research Framework.....	23
Chapter 2 Field research on Urban Ground of Chung Ying Street.....	25
2.1 The Formation and Historical Evolution of Chung Ying Street in Sha Tau Kok	25
2.1.1 The Predecessor of Chung Ying Street in Sha Tau Kok.....	25
2.1.2 The Sino-British Demarcation and the Formation of Chung Ying Street	27
2.1.3 The Evolution of Urban Ground in Chung Ying Street.....	33

2.2 Ground Current Situation Survey and Mapping	35
2.2.1 Voids Identification and Mapping	35
2.2.2 Identification and Analysis of Spatial Interfaces.....	44
2.3 Site Analysis and Visitor Experience Research.....	55
2.3.1 Basic Analysis of Chung Ying Street, Sha Tua Kok	55
2.3.2 Visitor Questionnaire and Interview.....	59
2.4 Summary	63
Chapter 3 Case Inspiration and Design Strategy Review	65
3.1 Case Selection and Inspiration	65
3.2 Structural Coherence	66
3.2.1 Urban Ground Extension.....	66
3.2.2 Interface Echo and Continuity.....	67
3.2.3 Continuity of Fabric	68
3.2.4 Enclosing and Connecting.....	70
3.3 Visual quality.....	70
3.3.1 Building Ground Floor Treatment.....	70
3.3.2 Legibility	72
3.3.3 Granularity	73
3.4 Comfort and sustainability	74
3.4.1 Covering and Urban Furniture	74
3.4.2 Landscape.....	76
3.4.3 Food.....	77
3.4.4 Sustainability.....	77
3.5 Summary	78
Chapter 4 Urban Ground Regeneration and Design Presentation of Chung Ying Street, Sha Tau Kok	80
4.1 Design Framework and Overview.....	80
4.1.1 Design Framework	80
4.1.2 Design Overview.....	81
4.2 Optimization and Generation Strategies for Figure-Ground Relationships.	86
4.2.1 Optimized Figure-Ground Relationships of Chung Ying Street.	86
4.2.2 The Optimization of Streets & Square System	88
4.2.3 Continuity of Functional Distribution	89
4.2.4 Continuity of Spatial Interfaces.....	90

4.2.5 Architectural Fabric Restoration	91
4.2.6 Vegetation System Refurbishment	92
4.2.7 Urban Seating Furniture	93
4.3 The Optimization of Spatial Interfaces and the Creation of Spatial Interface Patterns	94
4.3.1 Before and After Comparison of Site Space Interface Transformation	94
4.3.2 Two typical spatial interface patterns	98
4.4 Node Transformation Presentation	101
4.4.1 Yu Deng Wu Square and the Backstreet of Chung Ying Street	104
4.4.2 No. 6 Boundary Monument Square	106
4.4.3 Roadside Landscape Leisure Square	108
4.4.4 Quan Gang Hui Shopping Mall	110
4.5 Summary	111
Conclusion	112
Bibliography	114
Appendix 1 Field Survey Drawings	117
Appendix 2 Design Implementation Drawings	128
Appendix 3 Questionnaire Design	152
Appendix 4 Interview Transcript	154

Lists of Figures

Figure 1-1 Urban Ground: Voids, Continuous Spatial Ground	2
Figure 1-2 Urban Ground: Public Space Spatial Interfaces	2
Figure 1-3 Location Map of Yantian District	5
Figure 1-4 Chung Ying Street: the only Land Connection Between Shenzhen and Hong Kong.....	5
Figure 1-5 "Twin Cities, Three Circles"	11
Figure 1-6 Research Scope.....	20
Figure 1-7 Design Scope	21
Figure 1-8 Research Framework	24
Figure 2-1 The Sha Tau Kok Reclamation Map, 1825.....	26
Figure 2-2 Sha Tau Kok (Tung Wo) Market Map	27
Figure 2-3 Map of San On in Kwangtung 1866.....	28
Figure 2-4 The Adhesion Map of <Guidelines for the Expansion of the Hong Kong Boundary Site>.....	29
Figure 2-5 Hong Kong map in 1898. Schematic map of British colonial range.....	29
Figure 2-6 Map of Sha Tau Kok in 1900 (schematic map of the boundary between China and Hong Kong).....	31
Figure 2-7 The Tung Wo Market and The Sha Lan Ha Village, 1925.....	31
Figure 2-8 Map of Chinese-Britain Border in Sha Tau Kok, 1959	32
Figure 2-9 Sha Tau Kok Reclamation Process Between 1930s-2000s	34
Figure 2-10 The Historical Process of the Formation of Chung Ying Street	35
Figure 2-11 Current Status and Functional Area of Chung Ying Street Ground.....	35
Figure 2-12 Nuova Pianta di Roma, Nolli, Giovanni Battista	37
Figure 2-13 The Chung Ying Street Nolli-type Map.....	42
Figure 2-14 Chung Ying Street Ground Plan	43
Figure 2-15 Mediating Open Space	45
Figure 2-16 Tight, Wide, Active and Passive Spatial Interfaces	45
Figure 2-17 Location Distribution Map of Cross Section A-A and Longitudinal Section B-B	46
Figure 2-18 Cross Section A-A and Longitudinal Section B-B of Chung Ying Street	47
Figure 2-19 Distribution Location Map of 16 Cross-Sections in Chung Ying Street	48
Figure 2-20 Group Segmentation	56

Figure 2-21 Building Layers of Hong Kong side and Shenzhen side	57
Figure 2-22 Important facilities at Chung Ying Street	57
Figure 2-23 Distribution of boundary markers on Chung Ying Street.....	58
Figure 2-24 Function Distribution.....	59
Figure 2-25 The Population Structure of the Questionnaire	60
Figure 2-26 Age Distribution of the Questionnaire.....	60
Figure 2-27 Landscaping and Street Furniture Satisfaction	60
Figure 2-28 Whether the Shade and Rain Shelter Space Is Satisfied.....	61
Figure 2-29 Chung Ying Street Overall Feeling	61
Figure 2-30 Satisfaction with Supporting Service Facilities.....	61
Figure 2-31 Whether to Choose to Eat Here	62
Figure 2-32 Dining Experience Satisfaction	62
Figure 2-33 Community Communication and Interactive Spatial Perception	63
Figure 3-1 Case Studies for Strategy Generation	66
Figure 3-2 Santee Alley.....	67
Figure 3-3 Two Extensions of the Ground: Horizontal and Vertical.....	67
Figure 3-4 Historical Modulus	68
Figure 3-5 Interface Echo.....	68
Figure 3-6 The Figure-ground map of the inner city of The Hague 1911-2011.....	69
Figure 3-7 Good Containment Between 1:1 and 1:2.....	70
Figure 3-8 Commercial Spatial Interface	71
Figure 3-9 Commercial and Living Street Spatial Interface	71
Figure 3-10 Living Street Spatial Interface.....	72
Figure 3-11 Ground Floor and Side Walk Treatment	73
Figure 3-12 Fine and Coarse-grained Comparison	74
Figure 3-13 False Granularity and Dead Streets	74
Figure 3-14 Cover and Seat.....	75
Figure 3-15 Parklet.....	76
Figure 3-16 Landscape Square.....	77
Figure 3-17 Food and Place	77
Figure 3-18 Sustainability of the Building.....	78
Figure 3-19 Sustainability of the Urban Ground.....	78
Figure 4-1 Master Plan.....	82
Figure 4-2 Aerial View.....	84

Figure 4-3 Human-scale Street Renderings	85
Figure 4-4 Chung Ying Street Nolli-type Map.....	87
Figure 4-5 Existing and Proposed Road & Square System.....	88
Figure 4-6 Existing and Proposed Function Distribution.....	89
Figure 4-7 Existing and Proposed Spatial Interfaces	90
Figure 4-8 Existing and Proposed Architectural Fabric	91
Figure 4-9 Existing and Proposed Vegetation System	92
Figure 4-10 Existing and Proposed Urban Seating Furniture	93
Figure 4-11 Chuang Ying Street Ground Plan	95
Figure 4-12 Existing and Proposed Section A-A	96
Figure 4-13 Existing and Proposed Section B-B	97
Figure 4-14 Two Spatial Interface System	99
Figure 4-15 Veranda Building Commercial Spatial Interface Pattern.....	100
Figure 4-16 Active Living Space Interface Pattern	100
Figure 4-17 Spatial Ground Regeneration Techniques	101
Figure 4-18 Distribution Diagram of Design Nodes	103
Figure 4-19 Ground Floor of Yu Deng Wu Square	104
Figure 4-20 Section 1-1 (After Regeneration)	104
Figure 4-21 Section 2-2 (After Regeneration)	105
Figure 4-22 Section 6-6 (After Regeneration)	105
Figure 4-23 Yudengwu Square	106
Figure 4-24 Ground Floor of No. 6 Boundary Monument Square.....	107
Figure 4-25 Section 3-3	107
Figure 4-26 No. 6 Boundary Monument Square.....	108
Figure 4-27 Roadside Landscape Leisure Square	108
Figure 4-28 Section 4-4.....	109
Figure 4-29 Roadside Landscape Leisure Square	109
Figure 4-30 Ground Floor of Quan Gang Hui Shopping Mall.....	110
Figure 4-31 Section 6-6.....	110

Lists of Tables

Table 2-1 List of Information Categories in the Nolli Map	38
Table 2-2 Identification of Public and Private Spaces	39
Table 2-3 Subdivision of Streets and Landscape Spaces	40
Table 2-4 Veranda Commercial Spatial Interfaces	50
Table 2-5 Lively Commercial Spatial Interfaces.....	52
Table 2-6 Active and Passive Residential Spatial Interfaces.....	53
Table 2-7 Public Open Landscape Spatial Interfaces.....	54

Chapter 1 Introduction

1.1 Topic Explanation

Chung Ying Street in Sha Tau Kok is a city street with a unique historical background and distinctive geographical and political location. In 1898, a boundary marker was erected at the center of the street, dividing Sha Tau Kok into two parts. The eastern side of the street belongs to Shenzhen, while the western side belongs to Hong Kong, spanning two administrative regions: mainland China and Hong Kong. This configuration has created a unique situation of "one street, two systems." As a commercial street with a long history, in the 1980s and 1990s, Chung Ying Street became a shopping paradise highly sought after by the people of Shenzhen and even the entire nation due to its special geographical location. Owing to its multifaceted uniqueness encompassing historical, political, cultural aspects, among others, Chung Ying Street was ranked as one of the "Eight Scenic Views of Shenzhen"^[1] and later received recognition as a "Historical and Cultural Street of China"^[2].

In this context, "ground" refers to the near-human-scale spatial environment "urban ground"^[3] within the urban context. It serves as a platform or foundational plane for buildings^[4], upon which they are situated and interact. The urban ground provides the functions, spaces, and land use for buildings. More significantly, it offers public open spaces shared by both architecture and the city itself, including streets, squares, gardens, recreational areas, and more. On the other hand, "ground" describes the architectural forms of urban streets and public places. It represents a tangible urban space that caters to human-scale experiences and sensations within the city. This space is primarily shaped by the enclosure of low-rise urban structures. The experience of public realms is derived from streets and the various ways in which architecture interfaces with the ground^[3]. Thus, the urban ground serves as a means of defining human-scale spatial interfaces within the city.

The urban ground serves as the baseline for hosting public activities and urban elements. It encompasses both the first-floor built environment that constitutes the urban fabric and the open public spaces at ground level. Urban ground functions as a platform for various activities such as pedestrian movement, social interactions, commerce, and cultural events. Well-organized urban ground can infuse vitality and livability into the city, providing opportunities for social interactions, economic activities, and community engagement. Outstanding urban ground takes into consideration pedestrian-friendly environments, promoting inclusivity and accessibility.

Therefore, in the context of this study, the urban ground is not narrowly confined to the

physical ground plane but is analyzed and defined from an urban design perspective. It represents a human-scale, horizontal dimension of urban elements within the context of the urban fabric, as depicted in the “voids” within the figure (Figure 1-1). Additionally, it serves as a spatial interface for the experiential aspects of the urban public realm (Figure 1-2).



Figure 1-1 Urban Ground: Voids, Continuous Spatial Ground

(Source: Redrawn by the Author, Original Image from Morphocode Explorer)

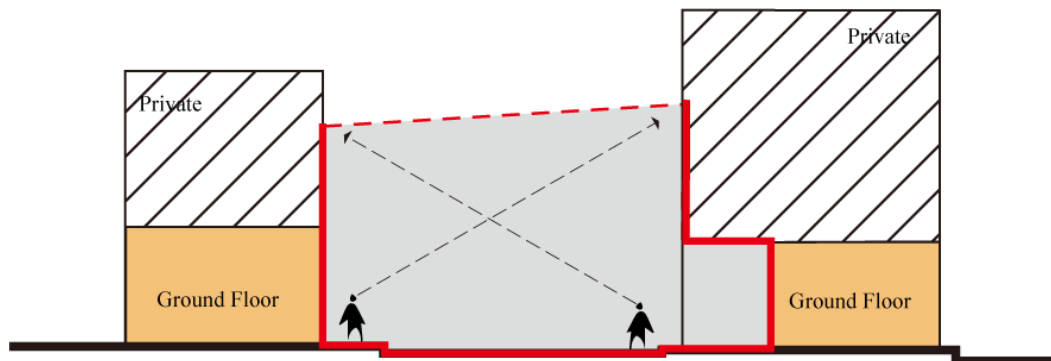


Figure 1-2 Urban Ground: Public Space Spatial Interfaces

(Source: Redrawn by the Author)

This study primarily focuses on the ground conditions of Chung Ying Street, including the street spatial interfaces, squares, indoor-outdoor transitions, and provides an overview of the historical evolution of the site's ground conditions. Additionally, it emphasizes the environment for pedestrian movement, covering the quality of the ground-level spatial layer and the lateral continuation of pedestrian sightlines in order to enhance the overall experiential quality. The ground conditions of Chung Ying Street reflect its unique geographical location, historical evolution, and even political history. Moreover, the ground bears the imprints of various construction phases from different periods. The complex and sometimes chaotic state of the ground, especially for visitors engaging in shopping,

sightseeing, and other activities, has resulted in a somewhat negative impact on their experience. This presents significant challenges for the future revitalization and transformation of Chung Ying Street.

1.2 Research Origin

1.2.1 Research Background

Since the beginning of urban development, the ground has always played an indispensable role. It is one of the fundamental elements in a city, providing a platform not only for human life, work, and leisure but also carrying various aspects of urban culture, social interaction, and public life^[5]. However, in the fervor of modernism, attention shifted towards the vertical development of cities, focusing on aspects like constructing high-rise and super-tall buildings, shaping urban skylines, and creating elevated platforms. This trend was driven by technological advancements and population growth, leading to increased urban density, with a growing emphasis on vertical construction, and the horizontal dimension represented by ground-level space was gradually marginalized. Various architectural endeavors of modernism aimed to draw pedestrians into buildings, distancing them from the streets. Modernist master Le Corbusier even proclaimed "the street is dead," relegating the ground to a space cluttered with various infrastructures. Fortunately, scholars like Jane Jacobs, Kevin Lynch, and Gordon Cullen pointed out the importance of the human-scale experience of streets, emphasizing the need to consider the city from the perspective of how people experience it, with a focus on the horizontal dimension of the city^[6]—namely, the urban ground that discussed in this study.

The urbanization process in China has transitioned from a high-speed growth stage to a high-quality development stage. Urbanization is now in its middle and later phases, where urban development has shifted from large-scale incremental construction to improving existing structures, marking a crucial period for urban regeneration. Domestic urbanization has entered a more mature phase, emphasizing overall urban quality and the need to enhance sustainability and public quality of life. In this new era, enhancing urban quality and the urban experience has become of paramount importance. Urban quality not only affects the quality of life for citizens but also directly influences a city's competitiveness, especially in terms of attracting talent, investments, and promoting sustainable development.

In Shenzhen, the urbanization rate of the permanent population has exceeded 90%^[7], signifying a shift in the city's development focus from new construction to the regenerated and transformation of existing urban structures. After decades of functionalist thinking, it

might be time to adjust our perspective and place a greater emphasis on the urban experience^[8]. Factors such as the rise of the knowledge economy, the ever-expanding global connectivity, intensifying competition in coworking, shopping, and residential domains, and the growth of the highly educated population are not only reshaping the overall values of cities but also highlighting the importance of the urban experience. Streets, squares, parks, terraces, and similar urban elements have become more than just places for people to exchange ideas; they have also evolved into attractions in their own right. Locations with unique cultural atmospheres and businesses are drawing more people, and residential areas with distinctive urban vibes are gaining popularity. This has become an integral part of the urban revitalization movement^[8].

Urban regeneration has become one of the key strategies for domestic urban development, focusing on the regeneration and enhancement of older areas and facilities within cities^[9]. In the process of urban regeneration, an increasing emphasis is being placed on the urban ground. The ground represents the public domain of the city, serving as the stage for people's daily lives. It includes various ground spaces such as streets, sidewalks, squares, and parks. These spaces not only provide pathways for transportation but also host a wide array of urban activities, including cultural exhibitions, social gatherings, and artistic performances. The ground is the true plane of the city, reflecting the city's culture, history, and social characteristics. It serves not only as the foundation and public domain of the city but also as a crucial medium for people to interact with the urban environment. By optimizing and enhancing the ground, the overall urban experience can be significantly improved, thereby enhancing the city's livability and appeal^[8].

1.2.2 Overview of the Development of Chung Ying Street in Sha Tau Kok

Sha Tau Kok is located on the border of the North District of the New Territories in Hong Kong and the Yantian District in Shenzhen, Guangdong Province (Figure 1-3). In 1898, the United Kingdom leased the New Territories from the Qing Dynasty for a period of 99 years. Subsequently, the northern land boundary of the New Territories was demarcated, with the Shenzhen River and the Sha Tau Kok River as the dividing lines. This division resulted in Sha Tau Kok being split into "Chinese Territory" and "British Territory." Over time, a street formed along the "Sino-British border." Chung Ying Street is the only place in mainland China connected to Hong Kong by land (Figure 1-4), with the boundary marked by a boundary stone erected in the center of the street, where the eastern side belongs to Shenzhen, and the western side belongs to Hong Kong.

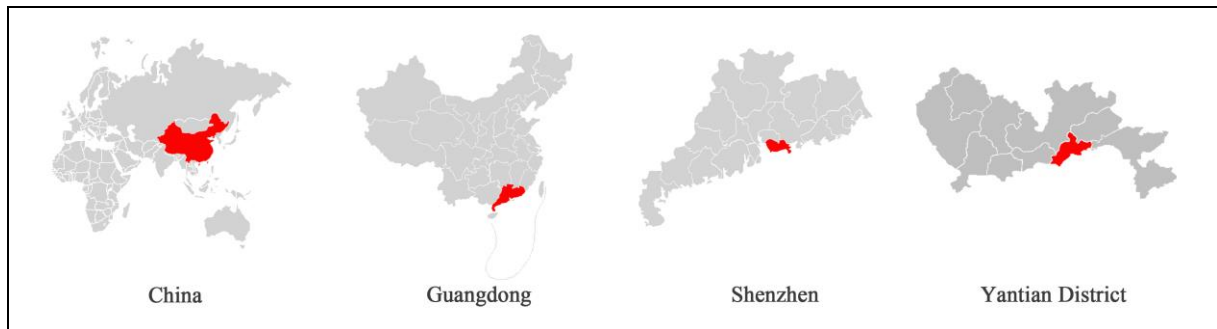


Figure 1-3 Location Map of Yantian District

(Source: Drawn by the Author)

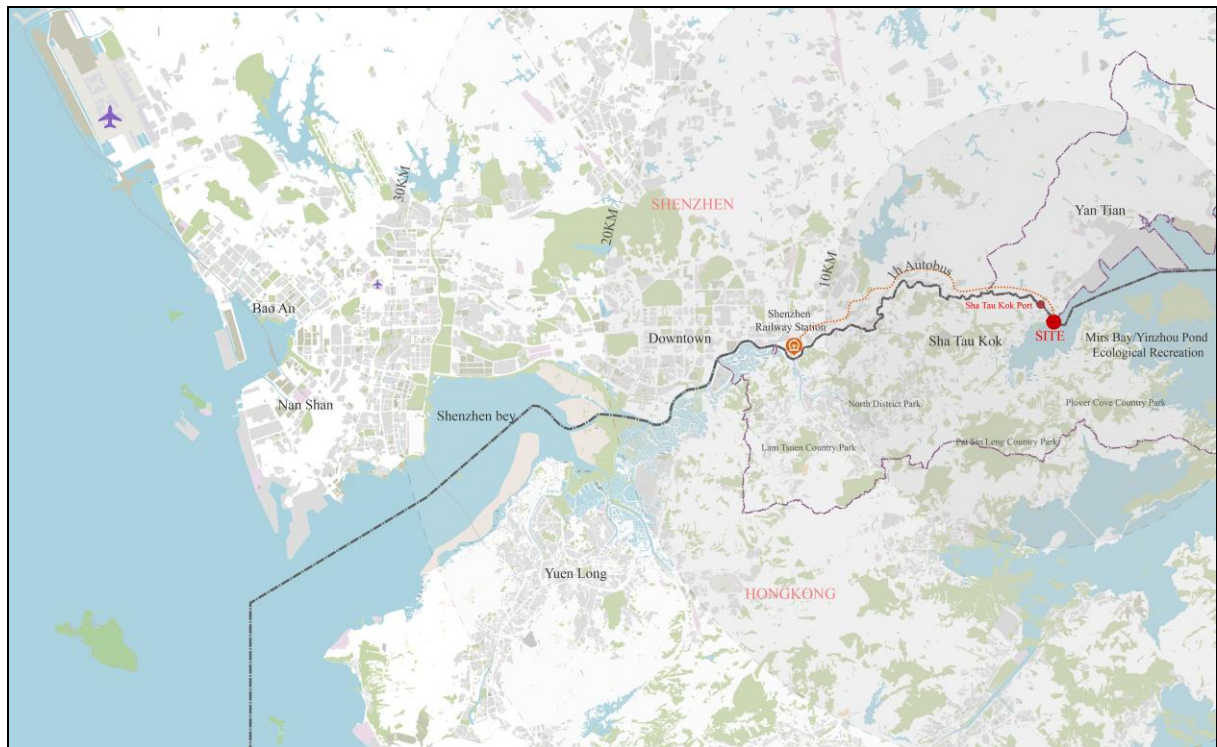


Figure 1-4 Chung Ying Street: the only Land Connection Between Shenzhen and Hong Kong

(Source: Drawn by the Author)

Before the 1980s, Shenzhen was just a little-known border town, and the Sha Tau Kok area where Chung Ying Street is located only had trading companies exporting goods to supply Hong Kong residents. Occasionally, there was some re-export of goods, but overall, the commercial activities were limited. In the 1980s, Shenzhen opened up as an economic special zone for foreign trade. This led to the influx of numerous people from mainland China who got to know and understand Hong Kong through this region. Chung Ying Street became a landmark in Sha Tau Kok and, consequently, experienced a boom in commercial development. Thanks to its unique location adjacent to Hong Kong and the advantages of being a duty-free street, the street was filled with a wide variety of goods offered at reasonable prices, attracting tens of thousands of visitors from all over the country. It gained a reputation as a "shopping paradise" and "a special zone within the special zone." During its peak, the street would

receive over 100,000 visitors in a single day. According to historical records provided by the Chung Ying Street History Museum, between May and October 1988, the sales of gold jewelry on Chung Ying Street reached 5 tons, with a total value of 650 million Hong Kong dollars. The prosperity of Chung Ying Street also significantly contributed to the economic development of Sha Tau Kok and the entire eastern region of Shenzhen^[10].

In 1997, with the return of Hong Kong to the motherland, Chung Ying Street became a vivid embodiment of the "one country, two systems" principle. On one side, it is administered by the Hong Kong Special Administrative Region government, maintaining a capitalist system. On the other side, it is under the jurisdiction of the Shenzhen Municipal People's Government, implementing a socialist system. As a witness to the successful implementation of "one country, two systems," this unique street gradually transformed from being a "golden street" into a tourist attraction. The boundary marker, the peace bell, and the Chung Ying Street History Museum allow visitors to trace the changes of this area spanning less than 0.2 square kilometers throughout the years.

However, since the 1990s, the commercial vibrancy of Chung Ying Street has been on the decline, losing its former glory. Commercial sales have plummeted significantly, and there has been a decrease in the number of out-of-town visitors. In the early 21st century, the number of tourists to Chung Ying Street experienced a continuous decline, with only 8 million visitors in 1998, dropping to 3.5 million in 2000, 1.6 million in 2001, and 1.28 million in 2002. In just a few years, the number of shops decreased from over 300 to just over 100, with more than 90% of the shops in the Sha Lan Ha village and Chung Shing village being converted into residential spaces. This stark contrast with the tourism development trends of Shenzhen and Yantian District shows that visitors have generally expressed low satisfaction with Chung Ying Street (with only 24.6% expressing "satisfaction" or "very satisfied") and have a decreased likelihood of revisiting^[11].

In 2004, the Chung Ying Street Restoration and Renovation Project was officially initiated with the overarching goal of "exploring the cultural connotations of Chung Ying Street, reflecting its historical significance, reshaping its urban image, and revitalizing its commercial and tourism vitality." In 2008, the Shenzhen Municipal Government issued the "Notice on Implementing Measures to Consolidate and Strengthen the Commercial and Trade Management of Chung Ying Street," promoting the reform of its commercial and trade systems. Since 2010, the Yantian District Government has continued to advance the reform of Chung Ying Street's commercial and trade systems, which includes constructing large shopping malls, renovating street-front shops, and introducing international property

management, further enhancing the commercial and tourism value of Chung Ying Street. In June 2012, Chung Ying Street, with its historical background of "one street, two systems" and unique cultural landscape, was recognized as one of the 10 "Historical and Cultural Streets of China" in the fourth session, making it the only district in Guangdong Province to receive this honor that year. As a representative of maritime civilization, on November 12, 2013, Chung Ying Street was shortlisted as one of Shenzhen's top ten historical landmarks in maritime culture during the seventh session of the Ocean Culture Forum^[10].

At the end of 2019, the COVID-19 pandemic erupted, and in the subsequent three years, Chung Ying Street experienced two suspensions and reopening. In October 2020, four months after the first "suspension" of Chung Ying Street, a large, bright red water horse was placed across it. In early 2021, while the COVID-19 situation in Shenzhen was stable, Hong Kong experienced a resurgence. To prevent residents of the two regions from coming into contact, the water horse was replaced by large partitions that were taller than a person. In 2022, both Shenzhen and Hong Kong faced another resurgence of the pandemic, with the situation in Hong Kong being particularly severe. The quarantine measures were further upgraded, with wire mesh added to the tops of the partitions, reminiscent of early border control measures^[12]. Closed off for nearly three years, Chung Ying Street once again became a witness to the times, reflecting a microcosm of the COVID-19 situation in the Shenzhen-Hong Kong region.

In December 2022, Chung Ying Street officially reopened its doors to tourists. Driven by the development plan of the Guangdong-Hong Kong-Macao Mirs Bay Area, Chung Ying Street has once again come to life, with a new role as the core area of the Sha Tua Kok Shenzhen-Hong Kong International Tourism and Consumption Cooperation Zone. This transformation aims to enhance the street's reputation and re-establish its status as a "Century-old Famous Street" and a "Shopping Paradise." By the summer of 2023, as the tourist season was in full swing, Chung Ying Street experienced a high daily average of approximately 17,000 visitors^[13].

1.2.3 Overview of the Current Situation of Urban Ground Chung Ying Street

The current state of the ground in Chung Ying Street is the result of constructions from different historical periods. After the repeal of the "Treaty of Nanking" in 1668, Hakka people migrated and settled in this area, engaging in land reclamation. The primary land reclamation projects were completed by the 1820s and 1830s, during which time an alliance formed by ten or eleven local villages, known as the "Shap Yeuk," (十约) established Tung Wo Market near the northern section of present-day Chung Ying Street, which is one of the earliest

predecessors of the current ground in Chung Ying Street^[14]. As history progressed, the market gradually shifted to Sha Tau Kok Market on the Hong Kong side of Chung Ying Street and extended along both sides of the street, overlaying constructions from various historical periods spanning over 200 years.

However, in the late 1980s, a new land reclamation effort created a significant area of new land, but it did not extend the urban ground of Chung Ying Street. The land obtained through this reclamation did not contribute to the public ground and was entirely occupied by enclosed residential areas with walls. After the handover of Hong Kong in 1997, the number of tourists visiting Chung Ying Street began to decline sharply. The number of shops decreased from over 300 during its peak to just over 100, and over 90% of the shops in Sha Lan Ha Village and Chung Shing Village were converted into residential units. By 2005, the last financial institution, Industrial and Commercial Bank of China, had also withdrawn from the street. Vacant shops and the conversion of commercial spaces into residential areas had a negative impact on the continuity and public nature of the ground in Chung Ying Street.

After enduring 3 years of pandemic-related lockdowns, people are gradually returning to their desire for real, in-person experiences. This desire is especially pronounced in a specific post-pandemic context, as people are showing a rapid resurgence in enthusiasm for offline social interactions and physical shopping experiences. This trend became particularly evident following the official reopening, where the limit on the number of visitors with pre-booked reservations at Chung Ying Street gradually expanded from an initial cap of 2,000 visitors per day to no set limit on the number of visitors. This measure led to a significant surge in the number of tourists to Chung Ying Street, especially during peak travel periods like holidays and the summer vacation for students. The number of tourists sharply increased.

However, as tourists flocked in, the spatial ground became crowded and chaotic. Prior to the pandemic, social distancing and online shopping had gradually become the norm. However, the post-pandemic situation has highlighted people's strong desire for outdoor social interactions, physical shopping, entertainment, and sightseeing. This shift emphasizes the strong need for real-world experiences, especially in places with unique cultural atmospheres and commercial attractions like Chung Ying Street, which have drawn in numerous visitors.

It's important to note that under this backdrop, urban ground carries more expectations and demands. While people's demands for urban ground were relatively static in the past, now it needs to adapt to the growing pedestrian traffic and a variety of social activities. This poses challenges for the organization and management of spatial ground because the existing urban

ground and its facilities can no longer meet this rapidly growing demand. Both tourists and residents have had their experiences negatively impacted, as the crowded and chaotic ground space cannot provide a pleasant sightseeing and shopping experience. Comprehensive planning and improvements are urgently needed.

The quality and functionality of the urban ground are crucial for the attractiveness and sustainability of urban neighborhoods. If the ground fails to provide adequate space and convenient facilities to meet the growing demands of both tourists and residents, visitors may experience inconvenience and crowding, reducing the overall quality of their experience in Chung Ying Street. This declining experience could gradually influence visitors' decisions, leading them to reduce their frequency of visits or choose to go elsewhere.

1.2.4 Overview of the Survey on Pedestrian Experience in Chung Ying Street

To gain a comprehensive understanding of the visitor experience in Chung Ying Street, this study designed surveys and interview outlines for tourists. Additionally, interviews were conducted with various groups, including merchants and residents. The research and interviews revealed a series of issues, including:

1. **Shade and rain shelter facilities:** A significant portion of tourists indicated that there weren't enough shade and rain shelter facilities, especially considering Shenzhen's subtropical monsoon climate. Spring often comes with rainy weather, summers are characterized by high temperatures and intense sunlight, and typhoon seasons bring heavy rainfall. Under these climatic conditions, activities such as sightseeing and shopping would have a significantly adverse impact on the visitor experience if continuous shade and rain shelter facilities aren't considered.
2. **Service facilities:** Tourists expressed low satisfaction with comprehensive service facilities, particularly concerning basic needs such as luggage storage, drinking water, and restrooms. There is a need to improve the provision of service facilities.
3. **Dining experience:** Most tourists expressed dissatisfaction with the dining experience in Chung Ying Street, citing limited food choices, a lack of variety, and average dining environments. Currently, the community's dining services are not enticing tourists to consume actively. There's a need to enhance the dining environment and quality.
4. **Interaction and engagement:** Tourists generally perceive low levels of engagement. Current exhibition and display installations, such as the Chung Ying Street Museum and the Border Culture Wall, are considered lacking in attractiveness and vibrancy.

Most tourists opt for brief stops for taking photos and similar activities, with less serious observation and learning taking place. A lack of excitement in the tour makes it challenging to stimulate active participation among tourists. There's a need to create a more interactive atmosphere.

5. Overall experience: Most tourists find their visits to Chung Ying Street relatively bland and not meeting their high expectations. They look forward to further improvements and the creation of a more comfortable and attractive high-quality environment.

1.2.5 Future Orientation of Chung Ying Street in Sha Tau Kok: the Core of Shenzhen-Hong Kong Tourism Consumption Cooperation Zone

On July 1, 2017, the National Development and Reform Commission, along with the governments of Guangdong, Hong Kong, and Macau, jointly signed the "Framework Agreement on Deepening Guangdong-Hong Kong-Macau Cooperation to Promote the Development of the Mirs Bay Area." On February 18, 2019, the Central Committee of the Communist Party of China and the State Council issued the "Outline Development Plan for the Guangdong-Hong Kong-Macau Mirs Bay Area," which is a guiding document for the development of Guangdong-Hong Kong-Macau cooperation. The current and future planning for the Mirs Bay Area is designed to propel this region, including Hong Kong and Macau, to become a world-class bay area and a world-class city cluster. The planning covers the short-term period up to 2022 and the long-term perspective extending to 2035. In August 2019, the Central Committee of the Communist Party of China and the State Council issued the "Opinions on Supporting Shenzhen in Building a Socialist Pilot Demonstration Zone with Chinese Characteristics." In February 2020, the Guangdong-Hong Kong-Macau Mirs Bay Area Office of the Shenzhen Municipal Committee issued the "Guiding Opinions on the Construction of the Guangdong-Hong Kong-Macau Mirs Bay Area in Shenzhen," which identifies the Sha Tua Kok Shenzhen-Hong Kong International Tourism and Consumption Cooperation Zone as one of the seven key construction platforms for future development. Chung Ying Street is the core of the Sha Tua Kok Shenzhen-Hong Kong International Tourism and Consumption Cooperation Zone.^[15]

In June 2021, the Hong Kong Policy Address platform presented the "Development Strategy Report for the Northern Metropolis," which emphasized the need to address Hong Kong's medium- to long-term land requirements and promote sustainable development. The strategy proposed the development of a northern metropolis that focuses on creating a space that is conducive for living, working, tourism, and innovative technology industries as

economic drivers. It also stressed the importance of enhancing cooperation between Hong Kong and Shenzhen to better integrate Hong Kong into the national development plan. The report outlined the development of a "Twin Cities, Three Circles" spatial framework for the Hong Kong-Shenzhen Mils Bay Area. One of the key elements in this framework is the development of the "Shenzhen Bay and Mils Bay Ecological and Leisure Tourism Cluster." Additionally, the plan prioritizes the development of five new railway projects in the northern urban area, one of which is extending the East Rail Line to Shenzhen's Luo Hu District. The report also proposed the establishment of "one location, two customs facilities," which involves setting up customs and immigration facilities between Luo Hu, Shenzhen, and Sheung Shui, Hong Kong. This proposal includes the study of a new railway station between Luo Hu Station and Sheung Shui Station (Figure 1-5). These initiatives are closely related to the future development and transformation of Chung Ying Street.



Figure 1-5 "Twin Cities, Three Circles"

(Source: Government of the Hong Kong Special Administrative Region^[16])

On August 23, 2022, the Yantian District People's Government released the "Implementation Plan for Accelerating the Development of the Sha Tua Kok Shenzhen-Hong Kong International Tourism and Consumption Cooperation Zone (2022-2025)." This plan outlines 30 key tasks to transform the cooperation zone into an international cross-border tourism destination, a leading city for international consumption, and an exemplary model of

integrated development between Shenzhen and Hong Kong. The cooperation zone covers an area of approximately 26 square kilometers and is centered around cross-border duty-free shopping in Sha Tua Kok. It includes four expanded regions: the Meisha Golden Coast Tourism Area, Yantian Port International Shipping Hub Area, East OCT Ecological Leisure Resort Area, and the Yantian Seafood Street Fishing Port Experience Area. These areas create a spatial development pattern with "one core leading and four regions interconnected." Chung Ying Street is at the heart of this "one core." Chung Ying Street, located in a unique geographical position, is the only area in Shenzhen connected to Hong Kong by land and sea. The residents on both sides of Chung Ying Street share a harmonious cultural exchange, making it a natural place for integration between Shenzhen and Hong Kong. It possesses a deep patriotic heritage, historical and cultural significance, and a rich tradition of commerce. Leveraging its unique historical, commercial, cultural, and ecological values under the "one country, two systems" framework, Chung Ying Street aims to become an educational demonstration base for promoting patriotism, a shared living space for preserving historical memory, and a dynamic hub for commerce, culture, and tourism^[17].

1.2.6 Research Question

Comprehensive analysis of urban ground of Chung Ying Street situation reveals issues on three levels.

1. **Functionality:** The original elevation differences on the ground were not designed with accessibility in mind, resulting in a rather rough treatment of elevation disparities. Numerous illegal expansion of buildings have led to a chaotic fabric of the block, unclear street layouts, and poor wayfinding and legibility within the site. Basic infrastructure and supporting facilities are relatively lacking, and dining choices are limited. The absence of indoor public ground or leisure areas leads many tourists to rest on outdoor steps.
2. **Visual Quality:** Commercial interfaces appear disorderly and inconsistent. The introduction of the Mega Mall, around 2020, displays an interface and style that significantly clashes with the original architectural style, with evident inconsistencies at the intersections of these interfaces with traditional shophouses. Residential interfaces directly face the street, lacking uniformity and buffering or mediating spaces in their design patterns.
3. **Experiential Quality:** There is a lack of suitable resting areas and high-quality landscape design.

1.3 Theoretical Inspiration

1.3.1 Figure-Ground Theory

In the field of urban design, the ground, as the foundational surface of the city and a critically important urban element, has been a primary focus in early urban mapping. Over time, related research and technologies have continued to evolve and develop. Among these, the Figure-Ground theory emphasizes the significance of the urban ground as "voids". It not only serves to connect and link buildings but also provides people with continuous open spaces within the city.

Moreover, the urban ground is not just a "plane" but rather a city space with a sense of enclosure based on human-scale dimensions. Throughout history, there has been significant attention given to urban ground, from the roads, squares, and buildings along the streets in ancient cities to modern pedestrian streets and urban public spaces. However, there have also been periods when it was neglected. Focusing on the urban ground often means paying attention to the human-scale dimensions of the urban experience, bringing people closer to the real essence of the city.

(1) Figure-ground mapping

The Figure-Ground diagram is a drawing technique used to illustrate the relationship between built and unbuilt spaces in a city. The land coverage of buildings is visualized as solid forms (figures), while the public spaces formed by streets, parks, and squares are represented as voids (ground). In urban design, this simple yet powerful graphical tool is used to explore patterns of building forms and the continuity of open spaces.^[18]

In the early modern period, urban cartography attempted to capture the visual appearance of buildings. Georg Braun and Frans Hogenberg, who published 546 town maps between 1572 and 1618, produced iconographic maps. They, along with many followers, depicted towns from advantageous positions such as bird's-eye or (often fictional) mountaintops. They first portrayed stylized buildings and then increasingly detailed depictions^[19]. However, the Imola map of 1502 was different. It was an accurate, measurement-based plan, not an image but a planimetric map - meaning it represented the plan or layout of buildings and spaces rather than their appearances^[18]. At that time, the Red Bishop Caesar Borgia was strengthening the town's defenses, and the planimetric representation was a form required for military engineering, illustrating the ground layout: structures, routes, spaces, and obstacles, among others. Planimetric mapping became a standard in military maps, but it turned out to be valuable for civilian purposes as well, such as municipal management, land registry, and

requirements for pilgrims and tourists finding their way.

A significant example with far-reaching influence is "Nuova Pianta di Roma" (New Plan of Rome) made by Nolli Giovanni Battista, published in 1748. As a precise background of urban architecture and spaces, this plan reveals the interiors accessible to the public as extensions of the street domain. In the words of Nicholas Vlachopoulos: "The scheme replaced traditional city perspectives or image views with systematic plan views, which, for the first time, made a clear distinction between public and private space^[20]. In Nolli's work, the plan of all public buildings (such as churches) is shown so that they can be understood as interior spaces connected to the city's streets and squares. Private spaces, filled with closed blocks and dense gray hatching, create strong visual contrasts (the "figure" of a graphic) and simulate "closed" areas.^[19]

During the urban transformations of the 19th century, plan drawings became the most easily recognizable visual identifiers of cities. William Pinnock, an Evangelical, published "The Guide to Knowledge" in the mid-1830s, a weekly miscellany that featured black-and-white planning maps of cities such as Liverpool, Dublin, Leeds, and Manchester, among others.^[21]

In the early 20th century, Camillo Sitte employed figure-ground diagrams to illustrate his concept that urban space (Stadtraum) is shaped by the historical and cultural context of a site. His work "The Art of Building Cities" includes dozens of studies in urban morphology, all of which use figure-ground representations to elucidate public spaces.

Similarly, Le Corbusier used figure-ground diagrams to highlight the contrast: traditional street patterns and enclosed spaces versus the green openness of modernist street spaces. In modernist cities, everything was different; the advent of motorized transportation disrupted the canyon-like streets, and buildings were freed from the constraints of walls. The relationship between solids and voids, which had historically complemented each other, was broken. As a result, modernism rejected the use of figure-ground diagrams. Michael Hebbert, in his study of the history of this survey technique, explained that this technique was rarely seen in the reconstruction plans of the 1940s, and even in the 1950s, when second-generation modernists began to rediscover the "heart of the city" and the "urban landscape," this technology was still absent.

By the late 1960s, disillusionment with modernism had reached a critical point. The desire for master planning was replaced by nostalgia for the past and a newfound interest in vernacular languages. Postmodernism also had an impact on architectural education. As practitioners and scholars rethought urban form, they began to look for new analytical

methods and graphic tools. Figure-ground relationships became the perfect pedagogical tool to resolve the collision between object-oriented modernist architecture and the historical fabric of cities. Colin Rowe and Venturi played significant roles in the revival of graphic background^[20]. Drawing figure-ground diagrams was a powerful pedagogical correction. Simplifying the complex forms of the city into black-and-white planes served a dual purpose: it revealed the heritage of continuous historical periods and provided a visual contrast of different formats throughout time: past, present, and future. Rowe saw the figure-ground plane as a foundation that reconciled two different, often opposing, traditions: street-based urbanism and building-oriented modernism. These two concepts of the city can be seen as two interpretations of the figure-ground or object-space relationship, one being isolated entities within the continuous urban space, and the other being spaces defined by almost continuous building entities (streets, squares, etc.). Rowe's student Graves demonstrated the potential of figure-ground techniques at various scales, from close-ups of individual buildings to overviews of towns, suburbs, and rural areas.

By the 1990s, figure-ground techniques had been widely established and had become popular, but they remained labor-intensive. Information technology and computerized drawing not only did not diminish the significance of figure-ground techniques but rather brought new impetus to them. Deconstructing electronic maps into different layers for selecting specific categories of objects became convenient, and software like Adobe Photoshop made graphic processing easy, making figure-ground maps richer and more accessible than ever before.

(2) Figure-ground mapping: The past, present, and future.

Figure-ground diagrams are widely used in urban design. When examined more closely, we can identify three main applications that reflect different points in time for a city: the past, the present, and what it might become in the future. At its simplest, figure-ground diagrams provide a clear representation of a city's existing urban form. For this reason, it conveys fundamental information about building forms and urban spaces in a visually understandable format.

In towns like Sheffield, Pontefract, and Wakefield, the practical value of well-crafted figure-ground maps can be observed. In the early 2000s, Fred Koetter of Koetter Kim Associates provided urban planning consultancy services to these towns through the regional development agency Yorkshire Forward, and over a decade later, his diagrams are still in use^[23]. Figure-ground diagrams are also widely employed in academic research to construct visual representations of urban environments. For instance, Alan Jacobs used them in his

classic work "Great Streets" to illustrate case studies.^[24]

In contrast, Juliet Davis's research on the figure-ground relationships in Hackney Wick demonstrates the second way figure-ground diagrams are applied: presenting history. Through her study of the "urban fringe" of Hackney Wick and the relationships it shares with nearby communities, Davis reveals the area's historical evolution throughout the 20th century. This illustrates the profound continuity in building, plots, and street forms over time and their significance to collective memory^[25]. Urban planning concerns both the past and the future due to the profound continuity of architectural, plot, and street forms over time, as well as their importance to collective memory. As Colin Rowe emphasized in the "Theatre of Memory," figure-ground maps are a powerful tool for revealing the dimension of time and providing precise descriptions of collective memory in public spaces.

The third application of figure-ground maps is design. Proposals for the future are a significant part of projects like the Cornell Studio and are integral to Berlin's critical reconstruction approach and the postmodern organizational restoration philosophy. Typically, proposed interventions are expressed in different tones to show how new buildings would fit within the existing organization and contribute to the site's development. Figure-ground maps serve as a technique in the design process, analyzing existing organization, generating parameters for the overall plan along streets and dimensions, setting street lines, and determining coverage areas suitable for new constructions. In all of this, the limitation of the figure-ground map becomes its greatest advantage. Since it deals solely with the form of urban spaces rather than their appearance, it respects the distinction between planning and architectural art. As Daniel Solomon noted, it is a purely urban design tool.

1.3.2 Urban Experience Related Theories

Urban Experience as a core focus in urban design profoundly shapes the form and function of cities. In urban design, the experiential human scale is considered crucial, involving how people perceive, interact, and emotionally experience the city. Two important scholars, Jan Gehl and William H. Whyte, have made outstanding contributions to urban experience and the human-scale experience, providing powerful guidance for urban designers.

Jan Gehl, a Danish urban designer and planner, emphasizes the centrality of social experience in urban design. His research highlights how urban spaces influence interactions among people. Gehl believes that creating social spaces is a primary task in urban design. His studies demonstrate that well-designed public squares, parks, and streets can become places for people to gather, communicate, and socialize. By observing and documenting people's

behavior in urban spaces, Gehl has proposed a series of design principles, such as increasing seating, providing shade facilities, and enriching cultural activities, to facilitate social interactions. His research findings have been widely applied in urban revitalization and planning, helping cities better meet people's social needs.^[25]

Another important scholar, William H. Whyte, delved deep into the social and cultural experiences of urban public spaces through his classic work "The Social Life of Small Urban Spaces". Whyte's research revealed that small urban public spaces like sidewalks, squares, and urban plazas are at the heart of urban life^[30]. He used methods like video analysis to meticulously record people's behavior in these spaces, uncovering how people use urban spaces for social interactions. His observations showed that micro-elements in urban design, such as benches, steps, horizontal surfaces, play a crucial role in fostering social activities. Whyte's research findings call on urban designers to pay closer attention to these micro-elements to enhance the social experience of urban spaces.

In addition to social experiences, urban design also focuses on cultural experiences. Cities are melting pots of culture, where various cultural elements converge^[31]. Therefore, urban design needs to consider how to preserve and promote the cultural characteristics of the city. This includes preserving historic buildings, creating cultural districts, and hosting cultural events. These measures can enrich the cultural experience of the city, making it a hub for cultural creativity.

Environmental perception is also a crucial component of the urban experience. Elements like landscape aesthetics, urban greenery, water bodies, and art installations can enhance the visual appeal and environmental quality of the city. By creating pleasant environments, cities can offer more enjoyable experiences and strengthen people's emotional connection to the city.^[32]

In addition to the above points, sustainability is also a key goal of modern urban design. Sustainable urban experiences encompass sustainable transportation, green building practices, and resource management. These measures not only improve the urban environment but also provide sustainable experiences, allowing people to enjoy a livable urban environment in the long term.^[33]

Urban experience holds a significant position in urban design. The research of Jan Gehl and William H. Whyte provides profound insights and practical methods, helping cities better meet people's social, cultural, environmental, and sustainability needs. By focusing on the experiential human scale, cities can create a more attractive and livable future.

1.3.3 The Urban Ground Shapes A Human-scale Urban Experience

The urban ground, as a fundamental component of urban space, plays a crucial role in shaping the urban or neighborhood experience. Experience refers to how people perceive, interact, and emotionally engage with the city^[34], and it is closely tied to the design, quality, and function of the ground. In the field of urban design, increasing attention is being focused on how to enhance the experience by optimizing the ground.

1. Ground as a stage for interaction:

Urban ground serves as one of the primary venues for daily activities in people's lives. Streets, squares, parks, and other ground spaces not only provide transportation and circulation functions but also serve as places for social, cultural, and recreational activities. High-quality ground spaces can facilitate interactions among people, create a sense of community, and foster a sense of belonging. For example, a spacious and pleasant street can become a gathering place for neighborhood socialization, and a well-designed city square can serve as a venue for cultural events and public gatherings. The design of the ground directly influences people's social experiences and emotional interactions.

2. Urban ground and cultural experience:

The urban ground is not only a stage for daily life but also carries the history, culture, and identity of the city. Buildings, sculptures, street art, and cultural activities on the ground can enrich the city's cultural experience. For instance, a historically significant square may be the site of traditional celebrations and cultural festivals, providing residents and tourists with profound cultural experiences. Therefore, preserving the ground and integrating cultural elements are crucial for enhancing the city's cultural appeal.

3.Environmental perception and urban ground:

Elements such as landscape aesthetics, greenery, water bodies, and art installations on the ground directly impact how people perceive the urban environment. Beautiful, tidy, and green city ground can enhance people's emotional satisfaction and create a more pleasant urban experience^[35]. A thoughtfully designed city park or street landscape can make people feel relaxed and joyful while also promoting urban sustainability.

4.Urban ground and sustainability

With increasing focus on sustainability, the design of urban ground has become a key factor in achieving a sustainable urban experience. Sustainability in urban ground design includes green transportation, low-carbon mobility, green buildings, and resource management, among other aspects^[36]. For example, designing sidewalks and bike lanes can encourage eco-friendly modes of transportation, reduce traffic congestion and pollution, and

improve urban air quality. These measures not only enhance the urban environment but also provide a sustainable urban experience, making people more inclined to choose city living and working.

In conclusion, the urban ground is a core component of the urban experience. By creating urban ground with social, cultural, environmental, and sustainability values, cities can significantly enhance their attractiveness, draw more residents and tourists, and promote urban prosperity and sustainable development.

1.4 Research Content and Research Significance

1.4.1 Research Content

This study aims to delve into an in-depth exploration and analysis of the urban ground in the Chung Ying Street in Sha Tau Kok, with a specific focus on its multi-dimensional aspects. This includes the two-dimensional voids and the three-dimensional spatial interfaces, as well as the transition relationships between these layers, encompassing aspects of interior and exterior, public and private. In this research, the ground is perceived as a complex urban spatial element. It not only represents the physical foundation of the city but also carries diverse social, cultural, and environmental functions, directly impacting the urban experiences of residents and visitors.

Firstly, the study centers on the two-dimensional aspects of urban ground: voids. This aspect involves the form and structure of the ground, including streets, squares, sidewalks, and more. Through the analysis of the existing voids in the urban ground, we will explore properties such as functionality, continuity, and medium transitions. We will also investigate their roles in social and cultural activities within the community. This will contribute to an understanding of how the ground in the Chung Ying Street influences the daily lives of residents and the experiences of visitors.

Secondly, this study will conduct an in-depth examination of the three-dimensional aspects of the ground, specifically spatial interfaces. This encompasses interfaces between streets and building elements, landscape interfaces, and their interactions with the surrounding environment. By analyzing spatial interfaces, we will further investigate spatial qualities, cultural characteristics, and environmental perceptions related to the ground. We will explore how these elements shape the identity and attractiveness of the city and neighborhood. This research will unveil the uniqueness and cultural value of the ground in the Chung Ying Street.

Lastly, attention will be given to the transitions between interior and exterior aspects of the ground and how it primarily involves shifts between public and private realms. This

includes changes related to elevations, medium transitions, functional shifts, among other factors. It encompasses elements such as entrances, exits, transitional zones, and connecting features on the ground. By studying the interior and exterior transitions within ground spaces, this study will explore the integration of urban ground within the city's structure and how it influences the mobility and interaction patterns of urban residents and visitors.

1.4.2 Research Scope and Design Scope

Chung Ying Street is renowned for its unique historical architectural charm and traditional commercial atmosphere. The community preserves many historically significant buildings, showcasing the cultural blend of Shenzhen and Hong Kong. The scope of this study encompasses a specific area within Chung Ying Street, Sha Tau Kok in Shenzhen and Sha Tau Kok Village in Hong Kong's New Territories (Figure 1-6).

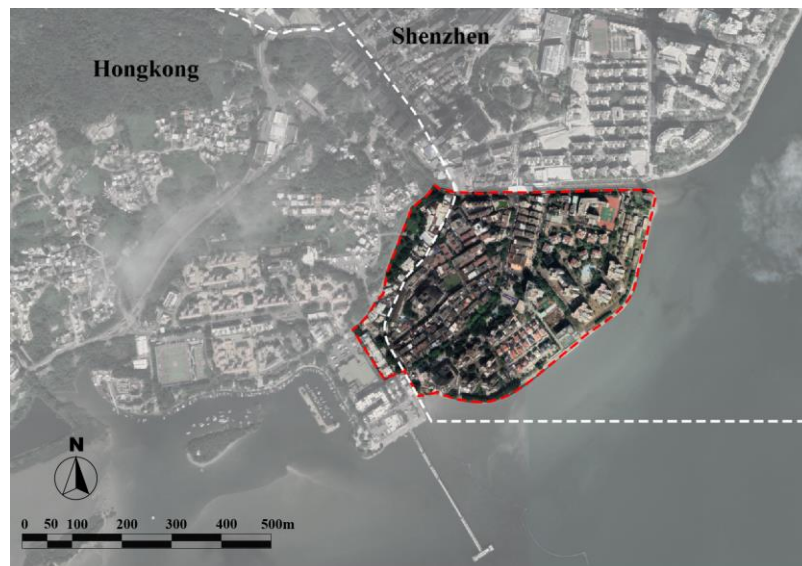


Figure 1-6 Research Scope

Figure Source: Drawn by the Author

The design scope of this study primarily focuses on the urban ground between the main street of Chung Ying Street and Sha Lan Ha Village (Figure 1-7), where the commercial and historical-cultural spaces of the site are concentrated. The main focus of the research and design is the public open spaces and ground-level buildings within this area, aiming to enhance the spatial vitality and quality of the Chung Ying Street by optimizing its urban ground.

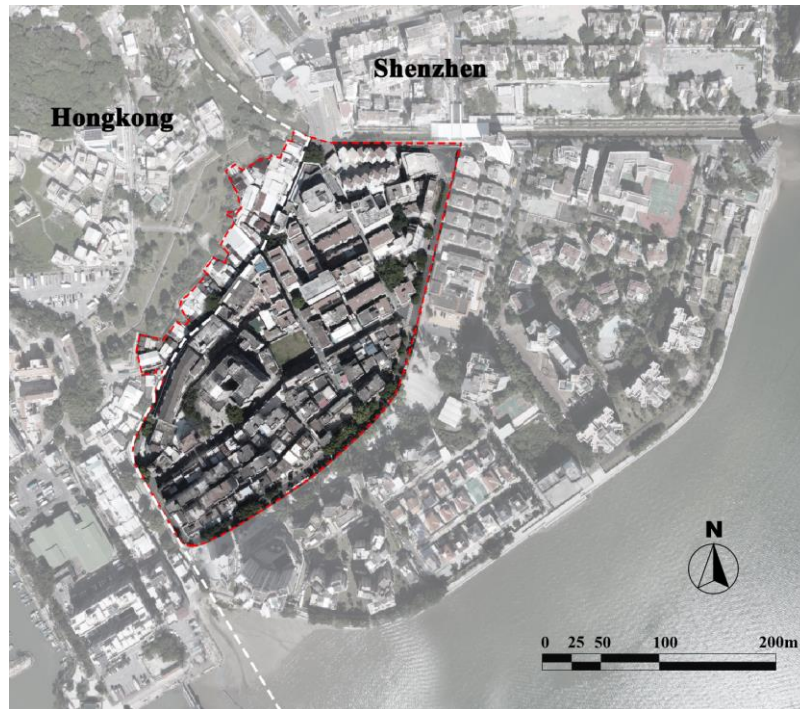


Figure 1-7 Design Scope

Figure Source: Drawn by the Author

1.4.3 Research Significance

This research holds academic and practical significance. The study focuses on the urban ground and its transitions within the Chung Ying Street in Sha Tau Kok. It not only expands our understanding of the ground but also contributes to a better comprehension of the connections and transitions between public and private spaces on urban ground. Specifically, studying processes such as changes in ground elevation, material transitions, and functional transformations will provide theoretical support for urban design, facilitating the optimization of the ground within the Chung Ying Street.

Furthermore, this research has a positive impact on enhancing the urban experience. In the context of accelerating urbanization, the ground, as a crucial component of urban public domains, directly influences people's daily lives and experiences. A multidimensional study of the ground can lead to a better understanding of people's perceptions and behaviors in the city, offering effective design strategies to improve the urban experience. This is significant for talent attraction, enhancing the city's image, and promoting sustainable urban development.

Additionally, this study fills a research gap regarding the ground within the Chung Ying Street in Sha Tau Kok. Despite being a well-known urban neighborhood, there has been a lack of specialized ground research until now. This research will provide theoretical support for the planning and design of this neighborhood, helping to address current issues such as ground space fragmentation, mixing, and congestion.

Finally, this research contributes to advancing academic research in the fields of urban design and planning. By expanding and discussing the meanings of the ground, it offers new research perspectives and methods to this field. This will help broaden the scope of research in urban design and foster the further development of the discipline.

1.5 Research Methods and Research Framework

1.5.1 Historical Data and Literature Analysis

The method of conducting an in-depth study of historical data and relevant literature involves a systematic analysis of historical documents and data from diverse sources, the reconstruction of drawings and models, and an exploration of the historical evolution of the spatial context. Data related to Chung Ying Street in Sha Tau Kok is relatively scarce, and available references mainly include local chronicles like "Chung Ying Street Chronicles," "The Past of Chung Ying Street: The 'Special Zone' within the Special Zone," and "From Closure to Openness: The Formation and Transformation of Chung Ying Street." Other relevant historical materials, including historical photos, maps, and news reports, are obtained from the internet, museums, and government archives. These historical data and literature serve as the foundation for a deeper understanding of the history and evolution of Chung Ying Street and provide a means to grasp the historical context for the research.

1.5.2 Field Research

The method of on-site investigation aims to gain an in-depth understanding of the research subject and supplement the most recent site data and required information about Chung Ying Street in Sha Tau Kok.

In this study, on-site research is divided into three key components to comprehensively grasp the current state of the ground space in Chung Ying Street and assess the real experiences of the people. The first part focuses on documenting the characteristics of Urban ground in Chung Ying Street, with a particular emphasis on the connections and transitions between public, semi-public, and private spaces, as well as the movement of people on the ground. The results of this part are organized and mapped to create detailed ground relationship diagrams for Chung Ying Street.

The second part is dedicated to observing and recording various spatial interfaces within Chung Ying Street, classifying them, and summarizing several typical patterns of spatial interfaces.

The third part involves observing and documenting the activities of people in Chung Ying Street. Surveys and interviews are conducted with visitors who come for sightseeing and

exploration. This allows us to collect the genuine feelings and evaluations of people about their experiences in Chung Ying Street, thereby obtaining more comprehensive data.

1.5.3 Case Studies

Case study method is an approach for in-depth research and analysis of specific cases to gain profound understanding. In this study, three international cases have been selected: the Downtown Los Angeles City Design Guide, the City Ground Design Guidelines of the Gold Coast City in Australia, and The Hague's inner city, which serve as the subjects of research.

The rationale for selecting these cases lies in their provision of systematic methods for urban ground element design, covering multiple critical aspects and factors that are pivotal in urban ground design. From these cases, strategies applicable to the ground design of Chung Ying Street can be summarized and derived. A deep analysis of these cases will contribute to drawing international experiences and best practices, offering robust references and guidance for the ground design of Chung Ying Street.

1.5.4 Research Framework

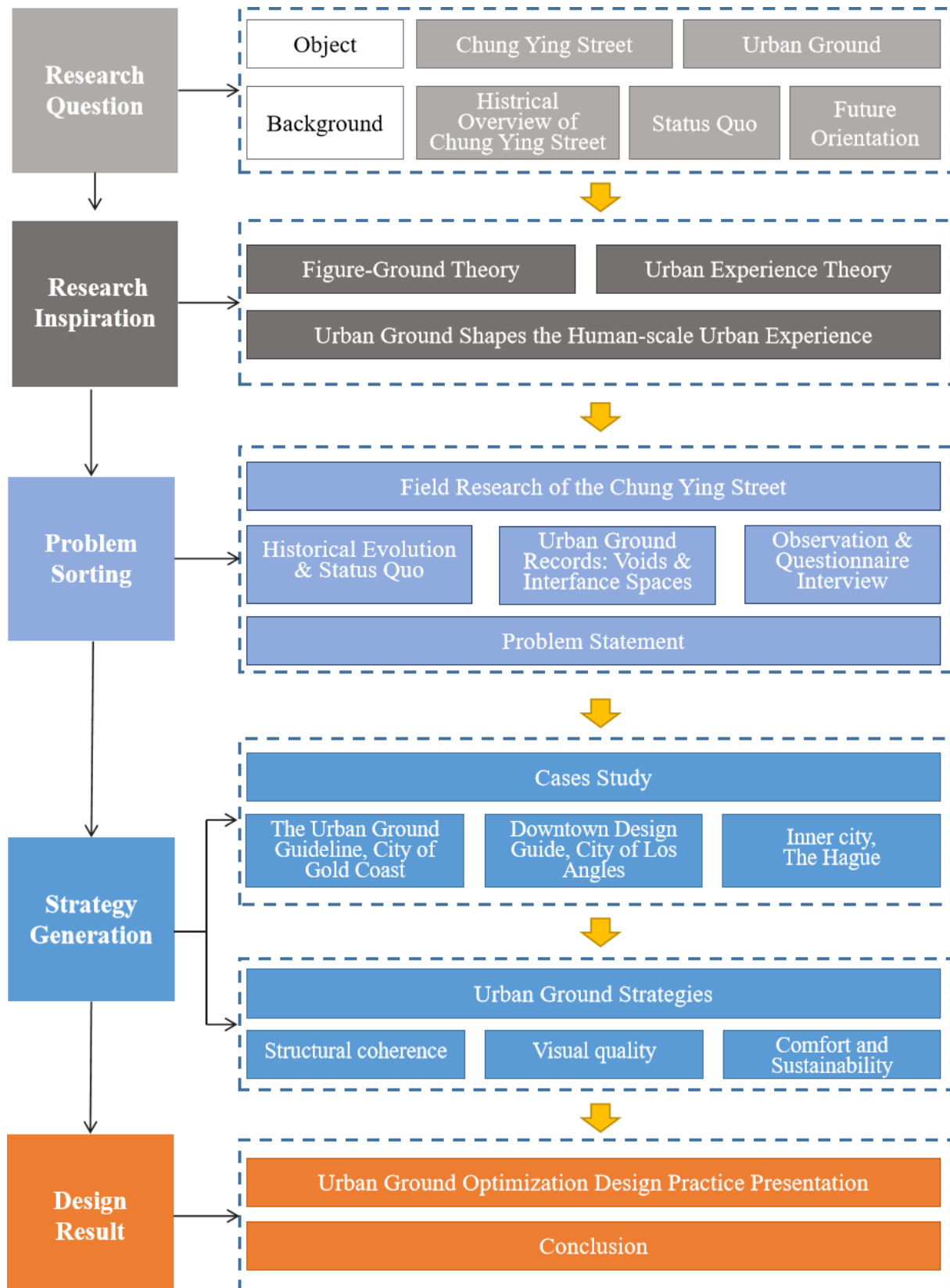


Figure 1-8 Research Framework
(Source: Drawn by the Author)

Chapter 2 Field research on Urban Ground of Chung Ying Street

2.1 The Formation and Historical Evolution of Chung Ying Street in Sha Tau Kok

2.1.1 The Predecessor of Chung Ying Street in Sha Tau Kok

Mirs Bay, located between Hong Kong and Shenzhen, is characterized by its rugged, mountainous coastline with scarce flatlands. Around 1668, the entire northern half of Mirs Bay was likely uninhabited until the revocation of maritime prohibition orders in that year. It was then that Hakka people, residents of the region, began migrating to this area. In the northwestern part of the bay, encompassing areas from Tu Lu Gang to Mei Sha, periodic markets referred to as "墟" (Xu) in Chinese and "bazaars" in English, were established in Sha Tau Kok. Over the 50 years following 1668, only about 15 villages were established in the local vicinity. By 1700, the total population of this area was estimated to be not more than 450 people. During the period from 1800 to 1825, the population of the Sha Tau Kok region increased to approximately 7,000 people. The span from 1668 to 1825 can aptly be described as the "village establishment phase" in the demographic history of this area (Figure 2-1).^[14]

However, in the early 19th century, signs of land scarcity began to emerge. Reclamation plans were initiated with the primary objective of draining water from the seabed closer to the land, thereby expanding cultivable land. Reclamation activities commenced in 1800 and lasted until around 1890. The period from 1825 to 1875 can be designated as the "land reclamation phase".^[37]

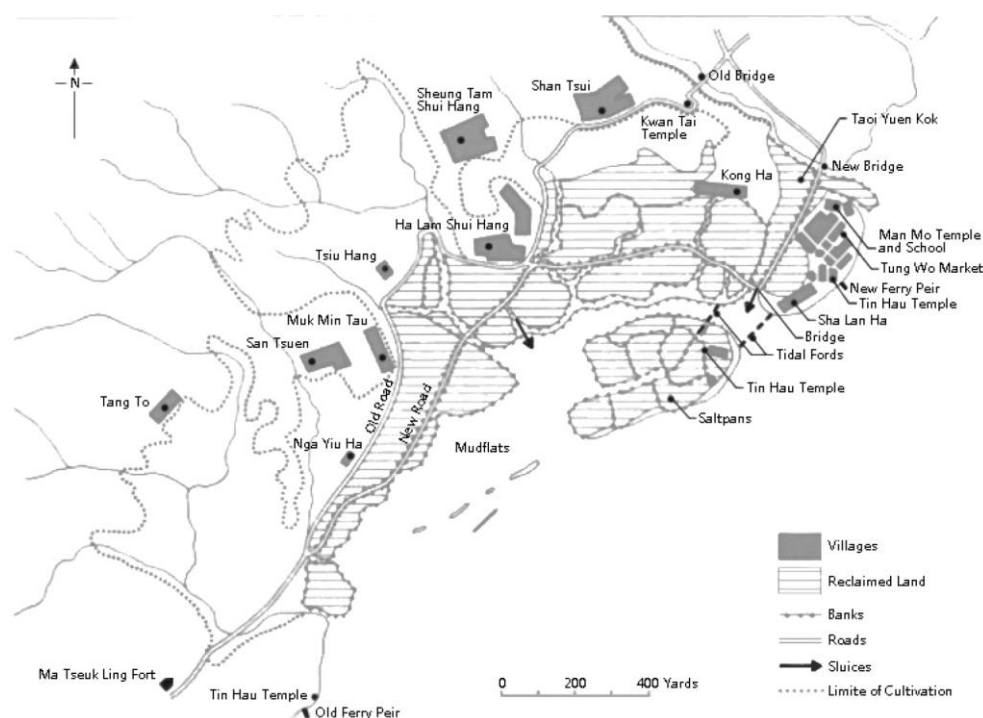


Figure 2-1 The Sha Tau Kok Reclamation Map, 1825

(Source: Hase P H, The alliance of ten: settlement and politics in the Sha Tau Kok Area, 1995)

The population of 7,000 was the minimum required for the establishment of a new market in the area. Therefore, in the early 19th century, the local population had already reached a level conducive to the formation of an independent market. At this point, leaders from relatively prosperous villages joined together to establish the market. With the support of the villagers, they formed an alliance, later referred to as the "Shap Yeuk", composed of 10 or 11 villages.^[38]

The market likely took shape between 1820 and 1830, following the completion of the major reclamation works in the bay. This newly established market was a town with an official name - "Tung Wo Market," (Figure 2-2) meaning "Eastern Peace Market." However, due to its location on sand dunes, it was more commonly referred to as "Sha Tau Kok". The information about Sha Tau Kok before 1899 is entirely based on the accounts provided by the Basel Mission missionaries and the maps they created. In 1848, the Basel Mission missionaries observed a thriving market, describing the entire town as an irregular square, roughly measuring about 350 feet by 300 feet.^[14]

The town they described was as follows:

"East and Peace Market is an important trading hub where people are primarily engaged in commerce. It is a newly established bazaar, and business is thriving... The name 'East and Peace' signifies that it's a marketplace, and there are no residences within it. Instead, all buildings are used as shops and workshops. Among them, there are six

pharmacies. In total, there are about fifty shops, both large and small, tightly packed together, forming two parallel streets, one running east-west. Most of the shops are grocery stores involved in retail trade, with only a few engaged in significant trade. The owners of these various-sized shops do not reside in East and Peace Market but live in nearby villages, coming here solely for business and trade or employing managers to run their enterprises.”^[14]



Figure 2-2 Sha Tau Kok (Tung Wo) Market Map

(Source: Hase P H, The alliance of ten: settlement and politics in the Sha Tau Kok Area, 1995)

2.1.2 The Sino-British Demarcation and the Formation of Chung Ying Street

In 1842, the signing of the Sino-British Treaty of Nanking marked the formal cession of Hong Kong Island to Britain by the Qing government. In 1860, through the Lo Chong Kwong and Bowring Agreement, the British forcefully "leased" the southern tip of the Kowloon Peninsula, expanding British influence in the Hong Kong region. That same year, the 6th study of the Beijing Treaty between China and Britain led to the cession of a portion of territory from the Kowloon District of Xin'an County (Figure 2-3) to Britain, which corresponds to the area south of Boundary Street on the Kowloon Peninsula. In 1895, France occupied the nearby Guangzhou Bay, raising concerns within the British government about the defense of Hong Kong. To ensure the comprehensive defense of Hong Kong, the British decided to expand the colonial boundaries. Consequently, the British Navy and Army Joint Committee proposed the "Report on the Boundary of the Colony of Hong Kong," which emphasized the need to control the waters between the islands and the mainland to protect Hong Kong. The plan involved expanding the colonial territory from the Shenzhen River to

Tai Peng Bay, based on suitable natural features.^[39]

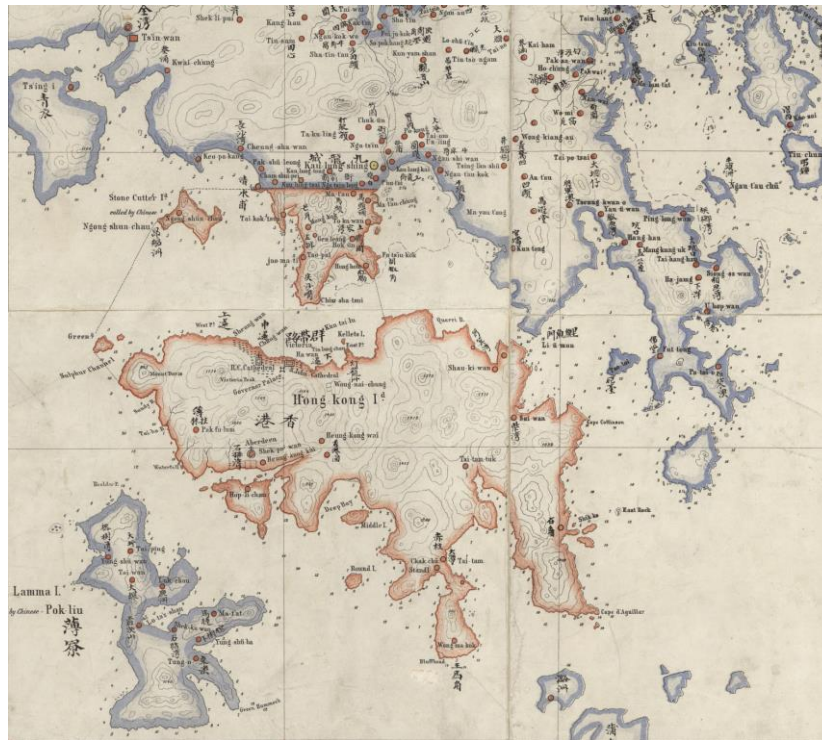


Figure 2-3 Map of San On in Kwangtung 1866

(Source: Yantian District Library, created by Italian missionary Simeon Volonteri)

On May 19, 1898, negotiations between the British and the Qing government regarding the "Convention for the Extension of Hong Kong Territory" were held, accompanied by an "annexed map" (Figure 2-4), which delineated the significantly expanded boundary area proposed by the British and accepted by the Chinese. The text of the convention specified this extension as "new lease territory," with a term limit of "ninety-nine years," and the "detailed boundaries to be finally determined after joint survey by representatives of both countries." The annexed map clearly indicated the latitudes and longitudes of the eastern, western, and southern boundaries, while the land boundary in the northern part of the New Territories became the focal point of dispute between the two sides.^[40]

At the eastern end in Sha Tau Kok, the Sino-British boundary, rather than being continuous, shows a Y-shaped intersection (Figure 2-5). Consequently, the land demarcation in Sha Tau Kok became a critical aspect of defining the boundary. This involved determining how to allocate the coastline (up to the high-water mark) to the British side and the villages to the Chinese side^[41].

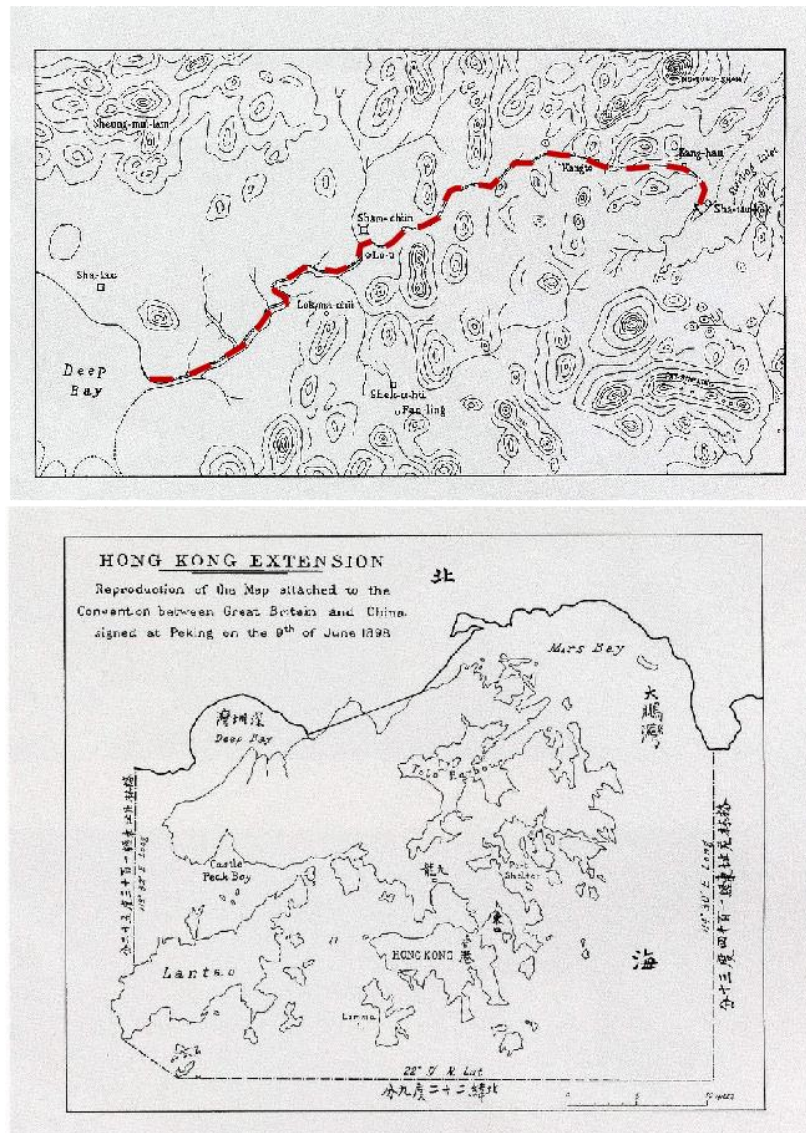


Figure 2-4 The Adhesion Map of <Guidelines for the Expansion of the Hong Kong Boundary Site>
(Source: Chung Ying Street Museum)

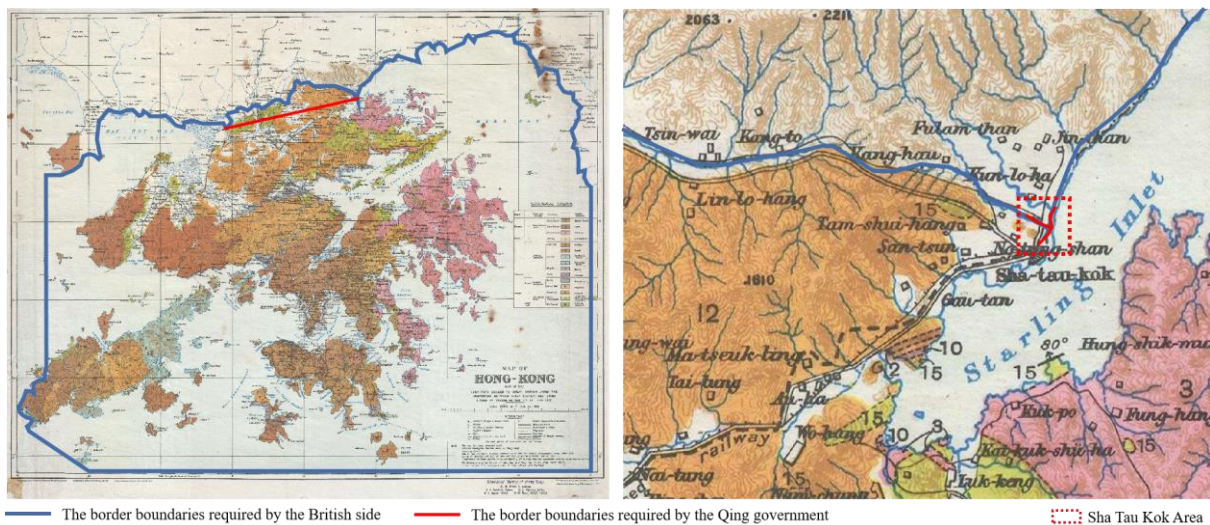
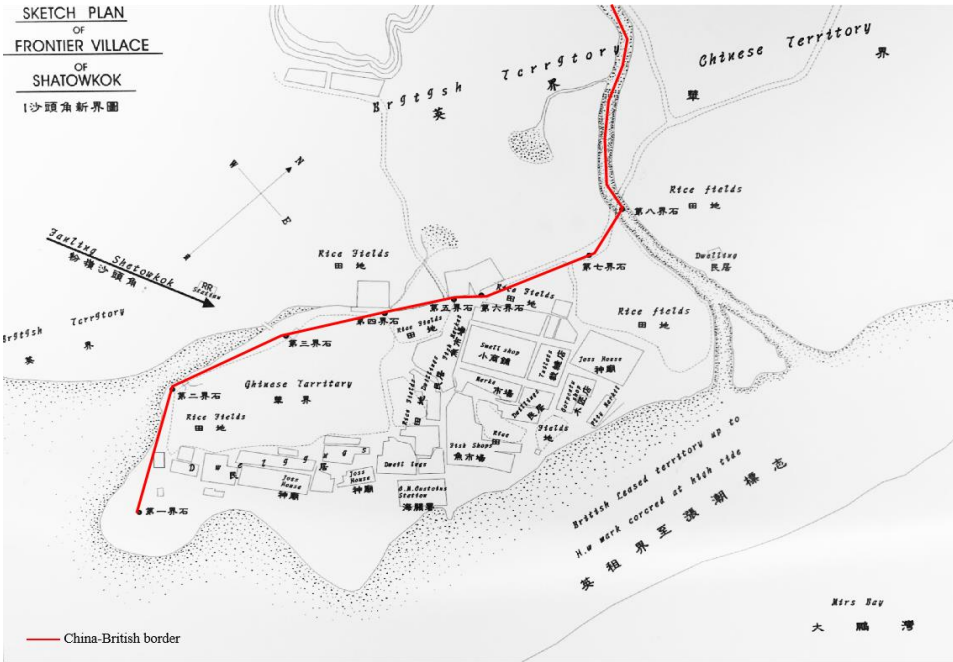


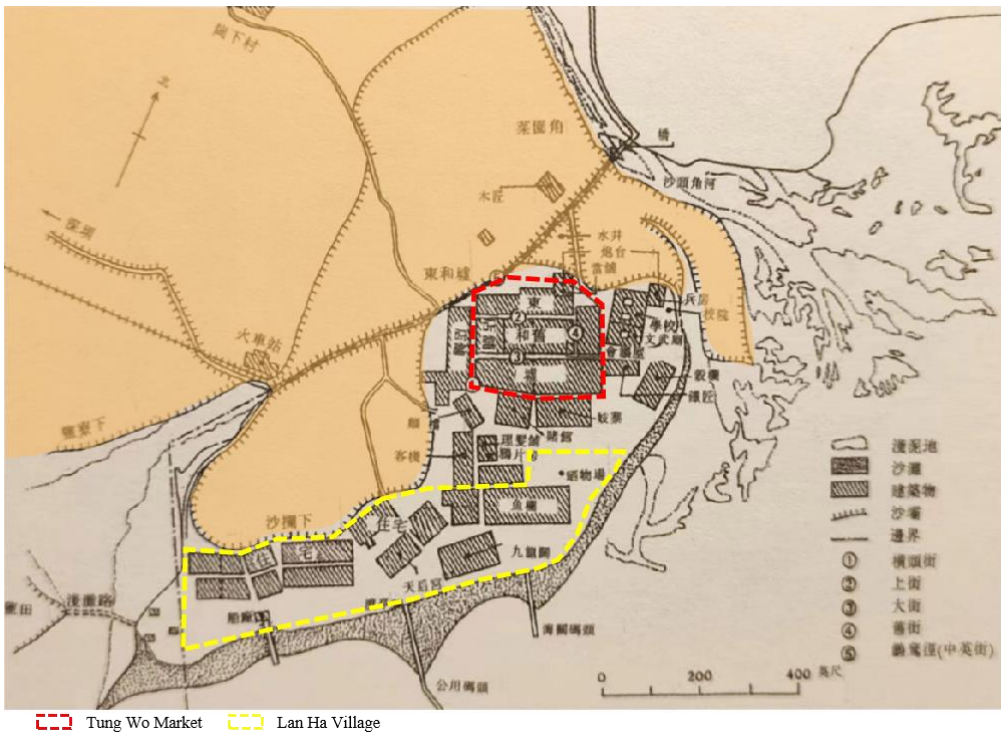
Figure 2-5 Hong Kong map in 1898. Schematic map of British colonial range
(Source: Chung Ying Street Museum)

According to legend, during the Sino-British boundary delimitation, it was decided that the boundary would be set at Sha Tau Kok River. However, the Wu clan members from the village of Sha Lan Ha in Sha Tau Kok were unwilling to be governed by the British and did not want to become subjects of a foreign nation. The village head gathered more than 20 young men from the village, and under the cover of night, they removed over ten boundary markers east of Sha Tau Kok Bridge. These markers were repositioned southwards in the dried-up riverbed (the original downstream section of Sha Tau Kok River). This alteration in the placement of boundary markers prevented Sha Lan Ha and Tung Hang Hau from becoming part of British colonial territory (Figure 2-6). After the boundary was officially set, British representatives, along with Chinese surveying employees, made multiple attempts to persuade the villagers to accept British jurisdiction, but the villagers consistently refused. Following the determination of the border, the people of Sha Tau Kok began to construct shelters and shops in this dried-up riverbed area, which served as the embryonic stage of Chung Ying Street.^[42]

The first boundary marker erected by the British and Chinese stood in the southeastern coastal area of present-day Sha Lan Ha village. Along the line of boundary markers was once a small river running near the marketplace. However, the course of the river shifted, creating a dry riverbed. Over time, people began filling this riverbed, forming a small path known as Lu Ci Keng^[43]. The land on either side of the path was used for vegetable gardens or small houses. This riverbend turned approximately 30 meters after the Hong Fuk Bridge, passing under the shops in the New Territories and some house foundations. It then curved again near the Hai Shan Restaurant before flowing into the sea through a watercourse west of Sha Lan Ha village (Figure 2-7). After the Sino-British boundary delimitation, Lu Ci Keng was no longer considered a remote area. People from both sides frequently traveled along the path. Residents on the British side either came to the Chinese side to fetch water or participated in the annual celebration of the Tin Hau Festival on the 23rd day of the third lunar month. Despite living on different sides of the boundary markers, they remained rooted in the same community.^[44]



(Source: Redrawn by Author, Original Image from Sun^[42])



(Source: Redrawn by Author, Original Image from Sun^[42])

On the Chinese side of Chung Ying Street, with the exception of a few existing small

houses and an ancient well near the school entrance that existed before the delimitation, most buildings were constructed in the 1930s. By the mid-1930s, there were over 40 shops on both sides, with the Chinese side and British side each hosting a substantial number. According to a boundary map (Figure 2-8) published on August 24, 1959, in the Hong Kong Commercial Daily, Chung Ying Street had 19 shophouses. These shophouses featured South-East Asian architectural styles, imparting a touch of Lingnan architectural culture to Chung Ying Street. For a considerable period, it served as the political, economic, and cultural center of the entire Sha Tau Kok area.^[45]

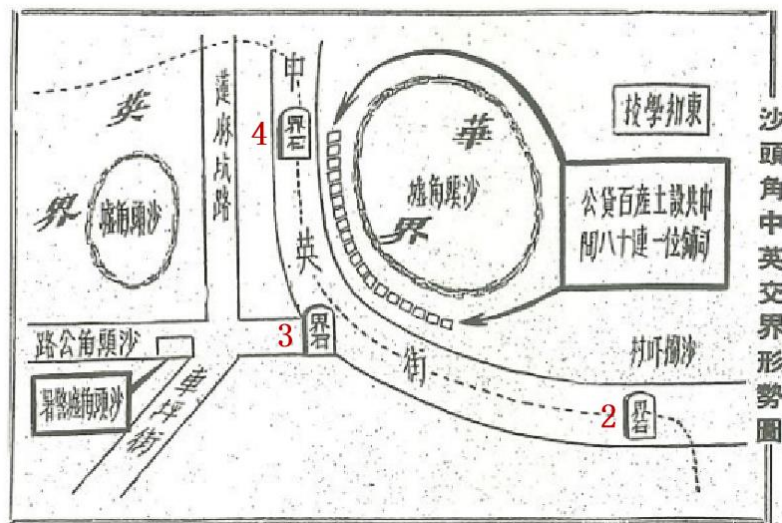


Figure 2-8 Map of Chinese-Britain Border in Sha Tau Kok, 1959

(Source: Redrawn by the Author, Original Image from Sun[23])

Prior to the establishment of the People's Republic of China, the border between Shenzhen and Hong Kong was open, and residents of Chung Ying Street could freely move across the boundary. In 1951, both Guangdong and Hong Kong simultaneously designated the areas along the Shenzhen-Hong Kong border as "border exclusion zones." This marked the beginning of border exclusion zone management in Chung Ying Street, severely restricting its commercial development. It wasn't until March 1979 that mainland residents were allowed to visit Chung Ying Street after obtaining the necessary permits in Shenzhen. This led to waves of mainland tourists flocking to the street. For mainland residents, the relatively lower prices and the wide variety of products in Chung Ying Street held tremendous appeal. From this point on, the street experienced rapid commercial growth and was hailed as a "shopping paradise." This period was even dubbed the "Golden Era" due to the fervor for gold purchases, turning Chung Ying Street into one of the most prosperous areas in Shenzhen.^[46]

However, since the mid-1990s, the further opening of the domestic market and an increased variety of available goods gradually reduced the price disparity between products in

Chung Ying Street and the mainland market. The return of Hong Kong to Chinese sovereignty in 1997 made it easier for mainland residents to travel to Hong Kong, leading to a significant decline in the commercial trade and tourism in Chung Ying Street. Consequently, the street had to confront the challenges of a difficult transformation.

2.1.3 The Evolution of Urban Ground in Chung Ying Street

Throughout the process of historical evolution, the ground of Chung Ying Street has continuously evolved in harmony with history.

Since the establishment of Chung Ying Street, land constraints have led to reclamation activities during various periods, which have extended the ground towards the eastern sea. Concurrently, vertical construction has proliferated, marked by a significant increase in commercial and residential buildings. Horizontally, the ground is densely occupied by buildings, and vertically, buildings have continued to rise.

Until 1979, the area of Sha Tau Kok in Shenzhen was a mere 0.09 km², while the New Territories' Sha Tau Kok covered 0.12 km². After the establishment of the Shenzhen Special Economic Zone in 1980, Shenzhen and the New Territories successively implemented reclamation projects. This led to Sha Tau Kok in Shenzhen expanding to 0.166 km², and the New Territories' Sha Tau Kok increasing to 0.167 km²^[47]. The spatial expansion of the Sha Tau Kok area can be divided into four distinct stages (Figure 2-9):

Following land reclamation in the 1930s, expanding agricultural land.; Reclamation and cultivation in the 1980s, with some of the reclaimed land used for constructing cooperative housing primarily for Sha Lan Ha village residents; Residential development in the mid-1990s, comprising a total of five residential areas covering an area of 2.68 square kilometers and with residential space totaling 5.06 square kilometers^[48]. Additionally, a small number of villas were constructed. During this time, real estate prices were relatively affordable, and convenient border crossings were available. As a result, over 90% of the property buyers were residents from the New Territories; Beyond the turn of the 21st century, the construction of villa areas became more prominent, primarily situated between Bi Hai Road and Lin Hai Road.

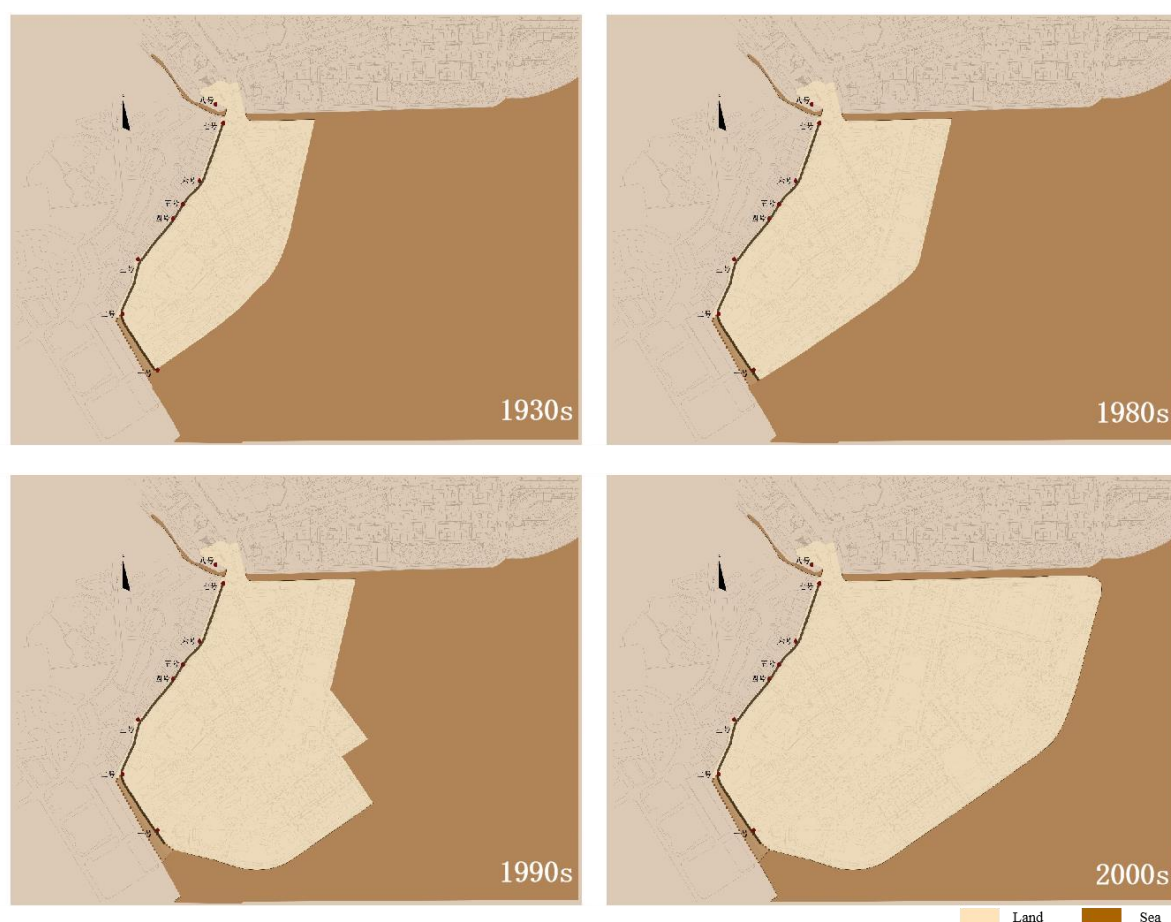


Figure 2-9 Sha Tau Kok Reclamation Process Between 1930s-2000s

(Source: Drawn by the Author)

Around 1918, some houses were constructed on farmland near Boundary Pillar No. 6, and this was followed by the development of houses and shops in the vicinity. In 1920, East Source Thai Grocery, Tung Wo Long Rice Store, and another pharmacy all opened for business near Boundary Pillar No. 5. Between 1920 and 1935, shipyards, residences, and wholesale grocery stores were built in this area. After the shipyard relocated, a small restaurant opened, which was the precursor to Haishan Restaurant. In 1930, Li Xinchang from He Keng Village in the New Territories built a row of two-story shophouses from a banyan tree near Boundary Pillar No. 4 to Boundary Pillar No. 5. These shophouses featured architectural elements influenced by the Southeast Asian style^[49]. Over time, more shops and establishments were added, contributing to the increasing prosperity of Chung Ying Street (Figure 2-10).



Figure 2-10 The Historical Process of the Formation of Chung Ying Street

(Source: Drawn by the Author)

The current situation on the ground in Chung Ying Street is more complex. Apart from Hong Kong Sha Tau Kok residents who can access Hong Kong through Chung Ying Street, regular tourists can only visit the shops on the Hong Kong side of Chung Ying Street. Moving further west leads to the Hong Kong Sha Tau Kok restricted area. On the north side of Sha Lan Ha Village, an open residential area was constructed in the 1970s. In contrast, the land reclamation and construction that occurred in the 1980s and beyond focused on closed residential areas without contributing to public ground space (Figure 2-11).



Figure 2-11 Current Status and Functional Area of Chung Ying Street Ground

(Source: Drawn by the Author)

2.2 Ground Current Situation Survey and Mapping

2.2.1 Voids Identification and Mapping

1. The Application and Discussion of Nolli-style maps

The most significant observations revealed by Nolli maps (Figure 2-12) are the clear distinctions between public spaces and private spaces. This can be further simplified as

"places people can go" and "places people cannot go"^[50]. Distinguishing between these two allows designers to control various movements in the city: the movement of people, goods, and commerce, essentially creating a city experience for its users. Public spaces encompass streets, squares, as well as open spaces within landscapes, courtyards, and public areas within buildings. Understanding the relationship between public and private spaces in Chung Ying Street is fundamental for creating or integrating pedestrian-friendly and human-centered place experiences. This knowledge can guide urban planning and design to foster a more welcoming and accessible environment.

Modern urban areas typically contain traditional spatial typologies, similar to the space types depicted in Nolli maps, and modern urban-specific space types like roadways, malls, parks, etc. For traditional urban blocks, the Nolli map approach can be directly applied to create maps of public spaces. The application of this method to modern urban blocks is still a subject of investigation and analysis.

When recording and mapping the public spaces of Chung Ying Street, the focus should primarily be on the ground areas that have existed since the 1820s and have continued to evolve. Ground gained from the 1980s' land reclamation activities does not contribute to public activities within the block. Most of these areas are occupied by enclosed residential complexes and are not accessible for public activities. Therefore, these areas are not the primary focus for research and design.





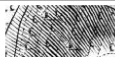








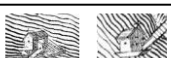

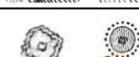
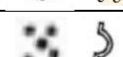

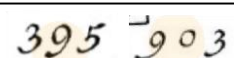
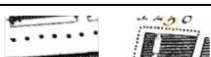


Identifying public and private spaces according to the principles of Nolli mapping is the first step in creating Nolli-type maps. In these maps, public open spaces are represented in white, and private spaces are filled with deep gray shading. To identify public and private spaces within Chung Ying Street, you would need to closely examine the various symbols and notations used on Nolli maps and compile a list of information categories. This information can guide the creation of accurate Nolli maps for this urban area (Table 2-1).



Figure 2-12 Nuova Pianta di Roma, Nelli, Giovanni Battista

(Source: the Nelli Map Website^[51])

Table 2-1 List of Information Categories in the Nolli Map

Category	Subcategory		Example
Urban built-up area	Public space	Street and square	
		Public parts of buildings	
	Private space		
	Green space		
Nonurban portions of the city	Hill		
	Quarry		
	River		
	Plantation		
	Grassland		
	Woods		
Municipal infrastructure and street furniture	Aqueduct		
	Bridge		
	Wharf		
	Water mill		
	River craft		
	Fountain		
	Drain		
Illustrative cartographic symbols and words	Textual label		
	Number		
	Line		
	Graphic symbol		
	Landscape painting		

(Source: Compiled by the Author)


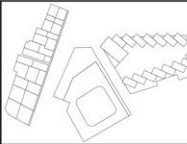
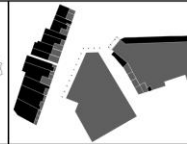

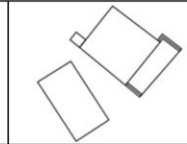
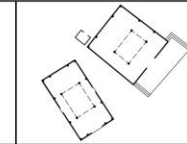


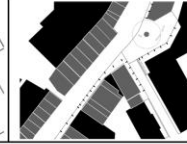

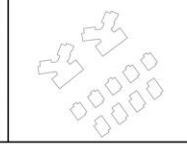
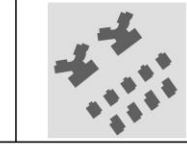

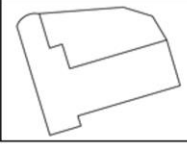
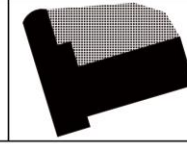

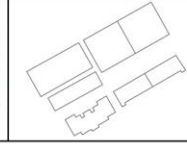
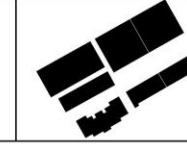

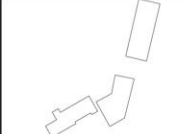


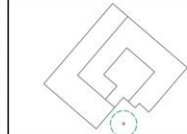
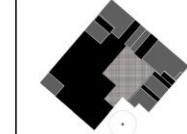
2. The identification of public and private spaces

In accordance with Nolli's cartographic principles, the initial step in constructing a Nolli-style map involves the explicit differentiation between public and private spaces, which are then designated by filling private spaces with deep gray shading. To identify the public

and private spaces within Chung Ying Street, a comprehensive field survey was conducted, adhering to the criterion of a space's public accessibility. Recognition of urban public spaces incorporates a temporal dimension, as some locations are open at certain times and do not close their doors to anyone. For instance, numerous shops within Chung Ying Street typically operate from 9:00 AM to 6:00 PM, and only close after 6 PM.

During this period, it is also when the public engages in activities like shopping, sightseeing, and other such endeavors. Hence, even though these establishments such as shops and museums are constrained by their operational hours, within this time frame, they are considered quasi-public spaces. This study employs a light gray shade to depict them as spaces that fall between entirely open public spaces and private spaces, operating during specific hours. Across the grounds of Chung Ying Street, areas with distinct functional uses exhibit varying distributions of public and private spaces. These areas also establish their unique characteristics and rules, which can be categorized into eight types (Table 2-2).

Table 2-2 Identification of Public and Private Spaces

Type	Roof plan	Mapping public and private space	Type	Roof plan	Mapping public and private space
Type1: commercial shops			Type5: public building		
					
Type2: arcade building			Type6: gated community		
					
Type3: school			Type7: open residential community		
					
Type4: office building			Type8: commercial and residential mixed building		
					

(Source: Drawn by the Author)

3. The identification of street and landscape spaces


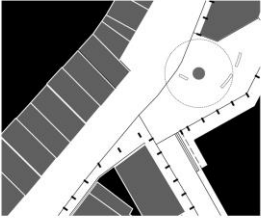

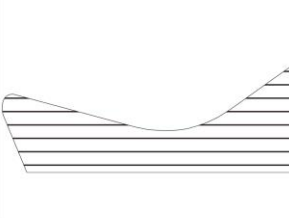

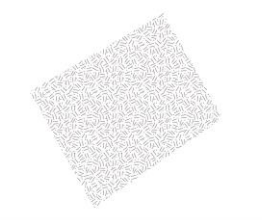

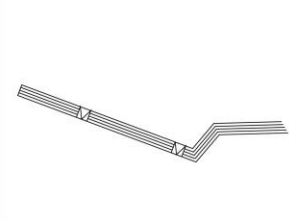
Nolli maps serve not only to differentiate public spaces from private spaces but also employ distinct graphical symbols to represent spaces that are observable but not traversable by people, such as rivers, lawns, and gardens. This mode of representation can reflect the

characteristics of spaces adjoining public spaces, facilitating the evaluation of public space quality. For instance, public spaces along a river and those adjacent to streets possess differing spatial qualities, evoking distinct perceptual experiences.

Hence, after distinguishing between public and private spaces, further subdividing landscape spaces aids in the creation of highly precise Nolli-type maps and in the study of urban public spaces. Based on an on-site survey of Chung Ying Street, landscape spaces can be subdivided into four types.

Type 1 comprises ground-level open public spaces such as streets and squares, all of which are represented in pure white, denoted as "voids." Type 2 corresponds to green spaces, which are lands partially or entirely covered by grass, trees, shrubs, or other vegetation. Type 3 encompasses water features, including rivers and seawater. Type 4 represents variations in elevation (Table 2-3).

Table 2-3 Subdivision of Streets and Landscape Spaces

Photograph	Legend	Photograph	Legend
Type1: public street & veranda street & plaza (voids)		Type3: water	
			
Type2: green		Type4: height difference	
			

(Source: Drawn by the Author)

4. The creation and analysis of the Nolli-type map of Chung Ying Street

The analysis of the Nolli-type map reveals that urban areas are composed of public spaces, private spaces, and green spaces. Based on this classification and taking Chung Ying Street as a case study, this explains how to create Nolli-type maps for various types of areas. Following the proposed mapping principles and methods, combined with detailed on-site observations of South Urban ground in Chung Ying Street surface, the maps illustrate how

this intricate modern urban block can be categorized and described. Drawing on research observations and records, nine mapping symbols were utilized to produce the Nolli-type map of Chung Ying Street, presenting the morphology of various urban spaces, particularly urban public spaces. Additionally, a ground floor plan was created to display fundamental information such as street names and site elevations (Figure 2-13, Figure 2-14).



Figure 2-13 The Chung Ying Street Nolli-type Map

(Source: Drawn by the Author)



Figure 2-14 Chung Ying Street Ground Plan

(Source: Drawn by the Author)

5. Summary and reflection on the figure-ground relationships in Chung Ying Street:

- (1) The veranda interfaces in Chung Ying Street are quite fragmented. The interface on the Shenzhen side of Boundary Stone No. 6 is not a veranda interface, causing pedestrians passing beneath the verandas in this area to disrupt their original route. At various corners of the veranda buildings, the interfaces abruptly break, and the connection is quite abrupt.
- (2) The distribution of commercial spaces, acting as quasi-public spaces, also experiences occasional "breaks". Both sides of Chung Ying Street feature retail-type businesses, and entering the interior of the site reveals the same business types with many vacant shops. However, leisure-type businesses like dining and creative activities are scarce, and the existing dining places are predominantly fast food types.
- (3) There are breaks in pedestrian continuity on the ground. Some alley structures have been unlawfully expanded, obstructing pedestrian pathways.
- (4) The ground functions are disorganized. While the main street of Chung Ying Street is bustling, the interior of the site is relatively quiet and doesn't effectively guide the crowd. On the Shenzhen side at the southern end of Chung Ying Street, the entire area is occupied by streets without distinct ground functional zones. In reality, the remaining space could be used to create ground recreational areas.
- (5) The ground lacks proper accessibility design. The overall terrain of Chung Ying Street is relatively flat, with a difference of 2.43 meters between the highest and lowest elevations. The handling of accessibility at various height differences is rough.

2.2.2 Identification and Analysis of Spatial Interfaces

The current state of spatial interfaces in urban ground in Chung Ying Street area is a complex amalgamation of construction from various time periods. The most active commercial activities are concentrated on Chung Ying Street, while the community displays a mix of commercial and residential usage. Positive spatial interface types mainly consist of courtyards enclosed towards the street or street-front retail shops constructed in place of courtyards, representing an architectural model oriented toward the street. These spaces serve as mediation areas between public and private domains.

Here is a simple conceptual framework example: tight and wide spatial interfaces, active and passive interfaces, mediating open space (Figure 2-15, Figure 2-16).

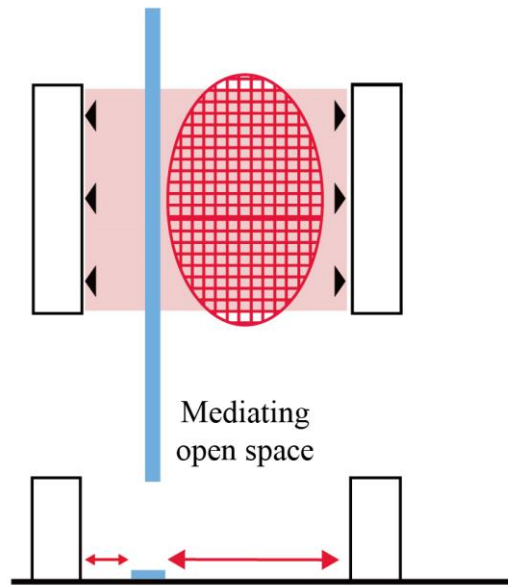


Figure 2-15 Mediating Open Space
(Source: Drawn by the Author)

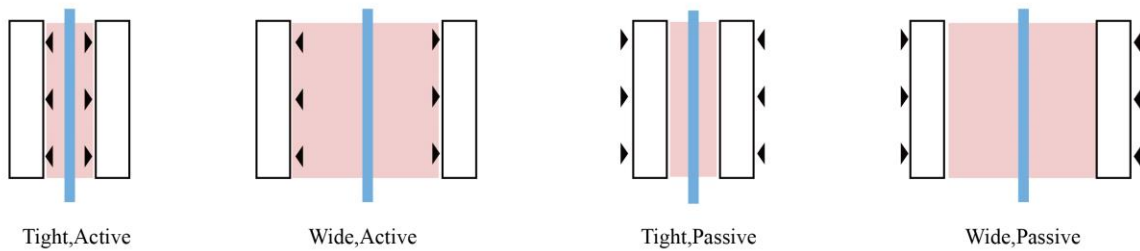


Figure 2-16 Tight, Wide, Active and Passive Spatial Interfaces
(Source: Drawn by the Author)

The study of spatial interfaces primarily involved recording and surveying the street interfaces along Chung Ying Street. This process led to the creation of site cross-sections, both horizontal and vertical (Figure 2-17, Figure 2-18), illustrating the spatial configurations. Additionally, 16 cross-sections were created at pedestrian scale along the main streets of Chung Ying Street (Distributed as indicated in Figure 2-19). Through the process of drawing and analyzing these diagrams, five distinct spatial interface types within Chung Ying Street were identified and summarized in a table.

(Source: Drawn by the Author)

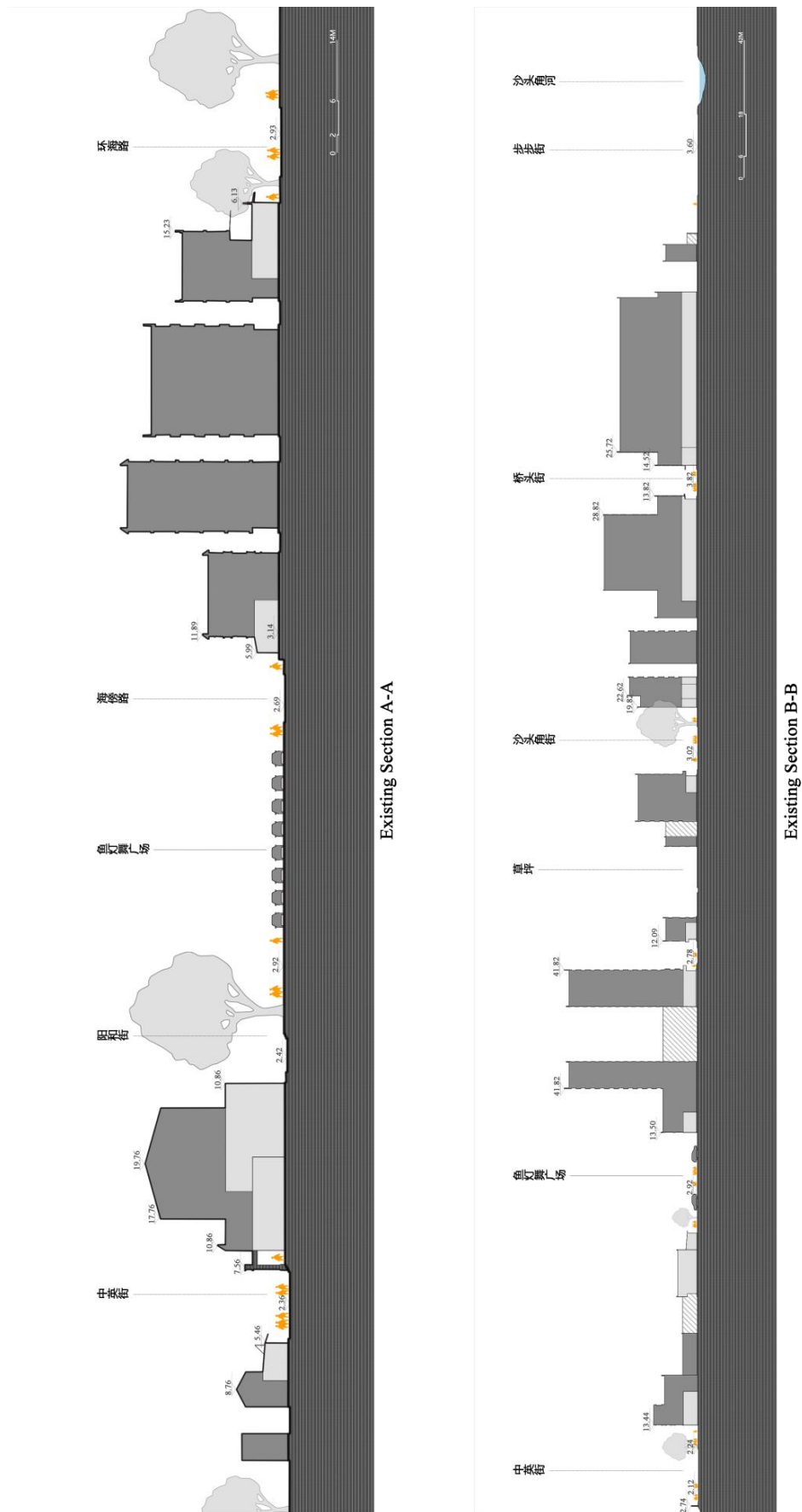


Figure 2-18 Cross Section A-A and Longitudinal Section B-B of Chung Ying Street
(Source: Drawn by the Author)




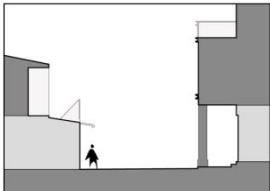


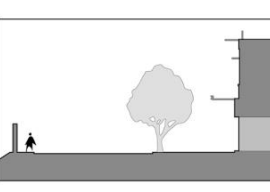
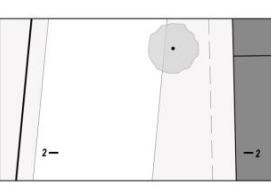

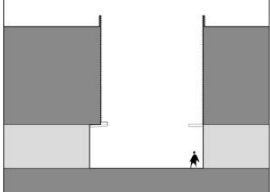


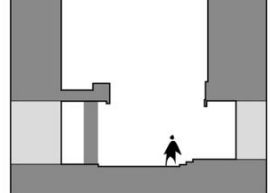


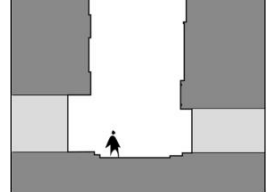
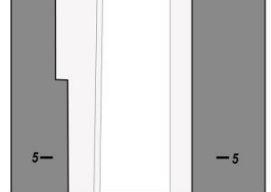

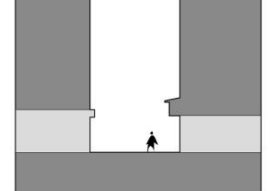
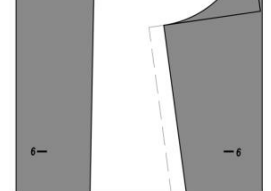
Figure 2-19 Distribution Location Map of 16 Cross-Sections in Chung Ying Street

(Source: Drawn by the Author)

Identification and Classification of 5 Spatial Interface Types in Chung Ying Street:

1. Veranda commercial spatial interfaces: on the Shenzhen side, there are verandas, while on the Hong Kong side, low-rise residential buildings with a certain depth of space facing the street serve as commercial shops. When pedestrians walk along Chung Ying Street, they can experience two different scales and architectural styles of spatial interfaces, making it quite distinctive (Table 2-4).

Table 2-4 Veranda Commercial Spatial Interfaces

Veranda Commercial Spatial Interfaces		
Photograph	Section	Plan
section1-1		
		
section2-2		
		
section3-3		
		
section4-4		
		
section5-5		
		
section6-6		
		

(Source: Drawn by the Author)

2. Lively commercial spatial interfaces: this type of interface represents a mixture of commercial and residential facilities. The residential buildings in different periods of Chung Ying Street have distinct characteristics. For instance, the self-built houses of Sha Lan Haa Village residents, typical multi-story residential units built in the 1980s, high-rise residential buildings, and enclosed residential communities each present different forms of spatial interfaces (Table 2-5).

Table 2-5 Lively Commercial Spatial Interfaces

Lively Commercial Spatial Interfaces		
Photograph	Section	Plan
section7-7		
		
section8-8		
		
section9-9		
		
section10-10		
		
section11-11		
		

(Source: Drawn by the Author)

3. Active and passive residential spatial interfaces: active residential interfaces combine residential spaces with public areas by orienting building facades and entrances towards the street, actively engaging in community street life. Passive residential interfaces mainly consist of residential areas where pedestrian entrances do not directly face the street but are more closed and private (Table 2-6).


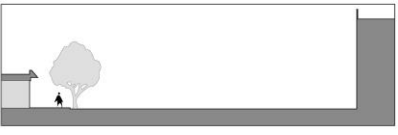


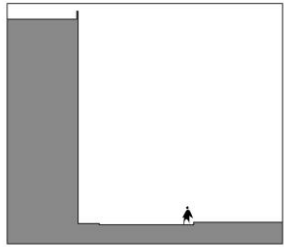
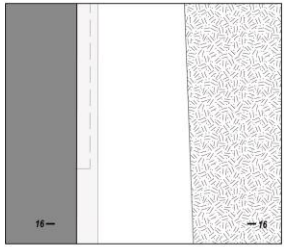
Table 2-6 Active and Passive Residential Spatial Interfaces

Photograph	Section	Plan
Active Residential Spatial Interfaces		
section12-12		
		
section13-13		
		
Passive Residential Spatial Interfaces		
section14-14		
		

(Source: Drawn by the Author)

4. Public open landscape spatial interfaces: such as the Yu Deng Wu Square and open green spaces (Table 2-7).

Table 2-7 Public Open Landscape Spatial Interfaces

Public Open Landscape Spatial Interfaces		
Photograph	Section	Plan
section15-15		
		
section16-16		
		

(Source: Drawn by the Author)

Summary and reflection on Chung Ying Street interface spaces:

- (1) Enclosure: some of the residential streets' interface spaces, due to the presence of walls or open plazas on the other side of the street, lack a sense of enclosure (sections 2-2, 13-13, 16-16). These spaces appear open and desolate, lacking shade during hot weather. Similarly, nearly all open landscape public spaces within the site lack enclosure (Yu Deng Wu Square in section A-A, section 15-15). These areas also fail to create functions and spaces suitable for lingering. Consequently, they are undoubtedly occupied by motor vehicles, thus losing their role as public spaces that promote activities and interactions.
- (2) Coarse-Grained and Fine-Grained (section 4-4): the newly constructed city plaza is a coarse-grained modern building at the north end of Chun Hui Street, occupying about 50 meters of the street frontage. However, it only has one opening that faces the street, while the rest of the façade is made of opaque glass curtain walls, creating a scale division. Likewise, due to its modern style, the façade lacks details, resulting in a lack of vertical scale and detailing. On the other hand, most areas on the Shenzhen side of Chung Ying Street adopt the veranda-style architecture, even

though they have more levels. The ground level is divided into multiple small shops, ensuring uniform scale and detailing on the facade. The small-scale shops on the Hong Kong side are particularly suitable for pedestrian exploration, making them fine-grained architecture.

- (3) Illegal construction that disrupts uniformity, spatial orientation, and legibility of the interfaces (Section 9-9, 13-13): there is a significant amount of illegal expansions encroaching on public ground within the site, severely compromising spatial quality. The continuity and uniformity of spatial interfaces are broken, causing visitors to lose their sense of space. This can result in a lack of spatial orientation and legibility within the street space.
- (4) Negative interfaces require landscape redesign of the spatial interfaces (section 14-14, 15-15, 16-16): these areas have negative interfaces directly facing the street and can benefit from landscape redesign to create a positive impact on pedestrians.

2.3 Site Analysis and Visitor Experience Research

2.3.1 Basic Analysis of Chung Ying Street, Sha Tua Kok

1. Group Segmentation:

The primary groups of people engaged in activities within Chung Ying Street are as follows: local residents, traders involved in local businesses, tourists entering the area through the Shenzhen border control station, and buyers engaging in cross-border shopping to profit from price differences. Their main demands and activity areas are illustrated in the diagram below (Figure 2-20).

The special border management status of the Sha Tau Kok area significantly influences the density of activities within the region. The opening and closing of the border checkpoints are critical factors determining the flow of people. Foreigners, including tourists and buyers, can enter the area starting at 9:00 AM and must depart by 6:00 PM, which means they cannot stay overnight. Therefore, the period from 9:00 AM to 6:00 PM becomes the primary active time for tourism and commercial trade. On the other hand, the activity times of local residents are hardly affected by the opening hours of the border checkpoints.

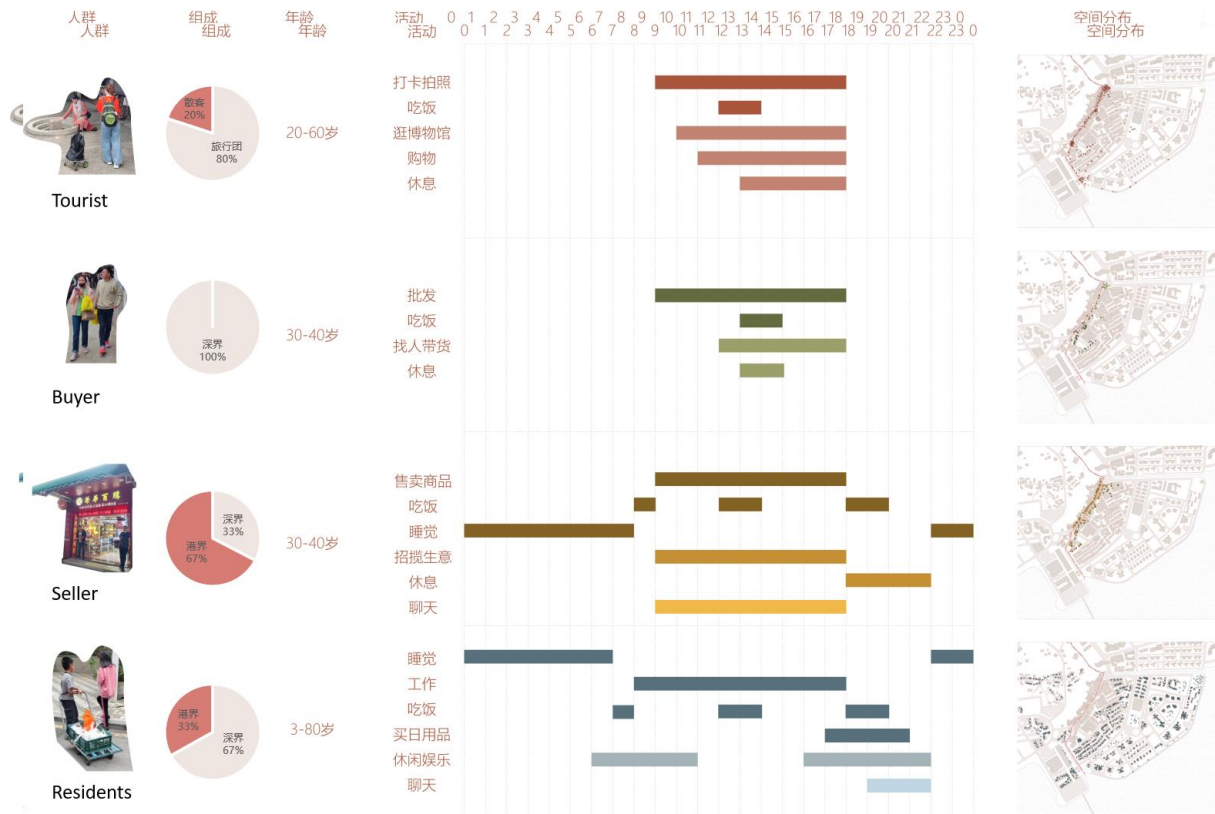


Figure 2-20 Group Segmentation

(Source: Drawn by the Author)

2. The current status of buildings on site

There is a noticeable imbalance in urban development between the Shenzhen and Hong Kong sides of Chung Ying Street. Shenzhen's buildings are mainly multi-story structures with relatively large volumes, but well-planned commercial concessions prevent them from feeling overly imposing. In contrast, the low-rise buildings on the Hong Kong side are more suitable for the scale of the neighborhood but tend to have lower construction quality (Figure 2-21).

The distribution of existing key facilities on Chung Ying Street can be seen in Figure 2-22, with the main concentration within the designated design area. The boundary markers (Figure 2-23) scattered along Chung Ying Street play a crucial role in the historical landmarks, connecting the past and present of the street.



Figure 2-21 Building Layers of Hong Kong side and Shenzhen side

(Source: Drawn by the Author)

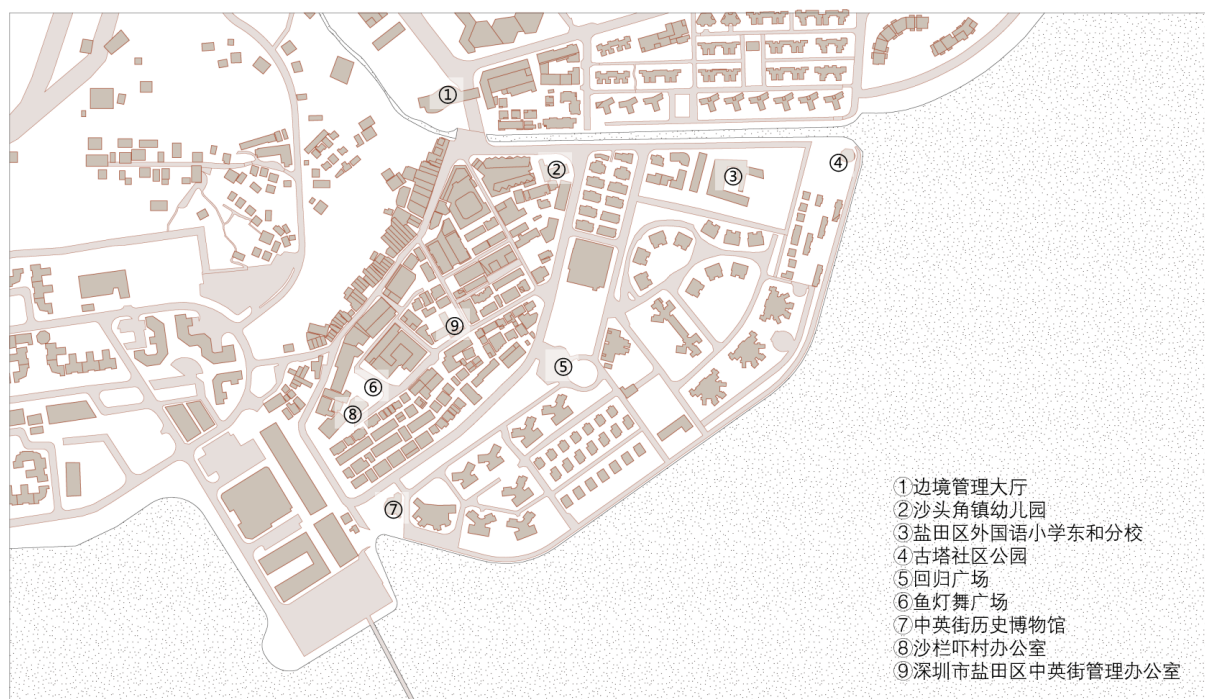


Figure 2-22 Important facilities at Chung Ying Street

(Source: Drawn by the Author)

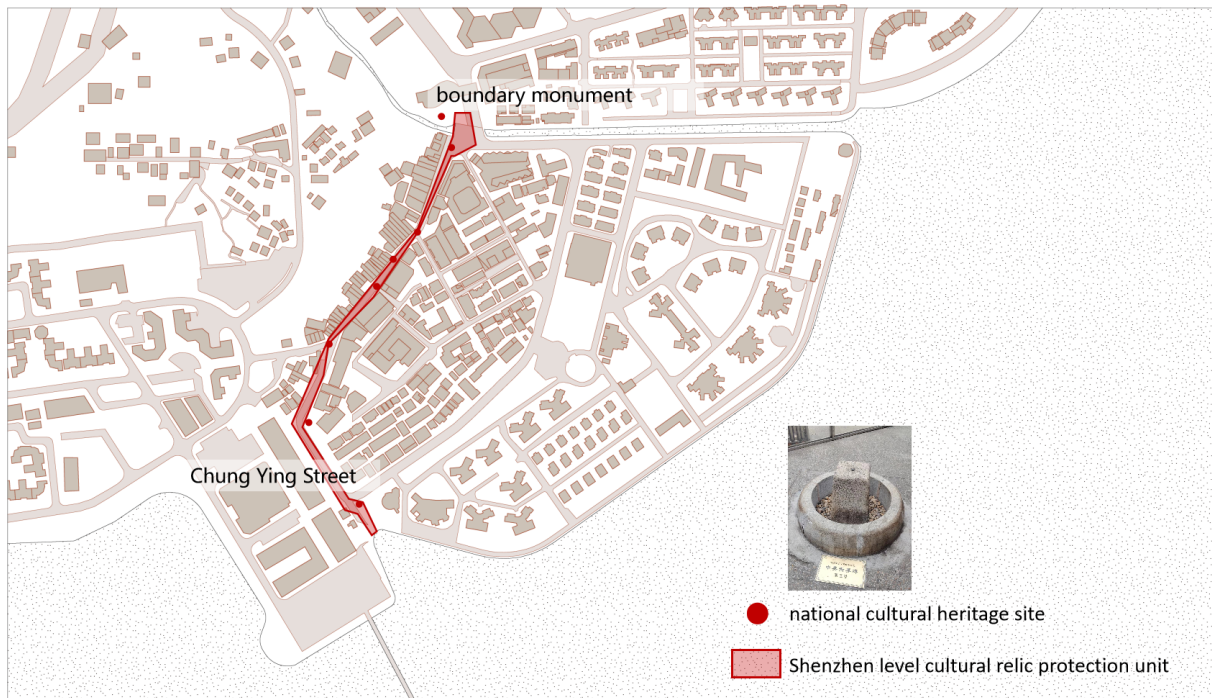


Figure 2-23 Distribution of boundary markers on Chung Ying Street

(Source: Drawn by the Author)

3. Function Distribution

On the Hong Kong side of Chung Ying Street, there are numerous independent small shops primarily selling items such as pharmaceuticals, personal care products, food, and luggage. On the Shenzhen side, most of the shops are duty-free megastores.

Currently, there are over a hundred individual shops and duty-free stores on both sides of Chung Ying Street. However, there are 14 vacant independent shops, with a vacancy rate exceeding 10%. Moving from the Shenzhen entrance to the end of the street, the vacancy rate of shops gradually increases, with many of the shops on the second and third floors of the duty-free stores being either vacant or poorly performing (Figure 2-24).



Figure 2-24 Function Distribution
(Source: Drawn by the Author)

2.3.2 Visitor Questionnaire and Interview

A survey interview questionnaire was prepared for all aspects of the comparative impact on the experience of Chung Ying Street. A total of 64 copies of the questionnaire were distributed, including the population structure of the questionnaire (Figure 2-25), which accounted for 75% of tourists, 12.5% of staff, and 6.25% of community residents and merchants. As for the age distribution (Figure 2-26), 37.5% were 18 years old and below, 31.25% were 19-34 years old, 12.5% were 35-55 years old and 18.75% were over 55 years old. The population structure and age structure of the survey are reasonable. Here are the results of the survey:

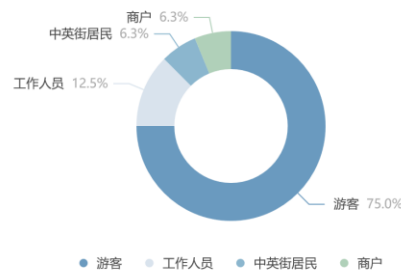


Figure 2-25 The Population Structure of the Questionnaire
(Source: Drawn by the Author)

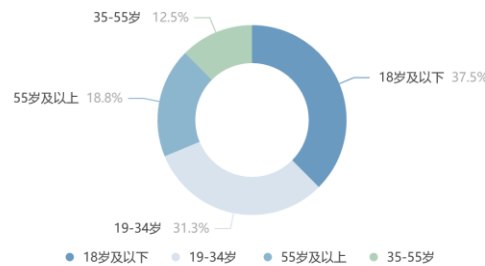


Figure 2-26 Age Distribution of the Questionnaire
(Source: Drawn by the Author)

Landscape and street furniture satisfaction: As to whether the landscape and street furniture in Chung Ying Street meet the needs of rest and leisure, 43.75% of the respondents said that they are not very satisfied, 31.25% of the respondents think that they are not so satisfied, and 25.00% of the respondents are relatively satisfied. None of the respondents felt completely satisfied (Figure 2-27).

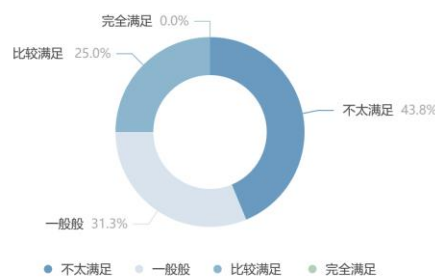


Figure 2-27 Landscaping and Street Furniture Satisfaction
(Source: Drawn by the Author)

Shade and rain shelter space: In the process of visiting and shopping, 87.50% of the respondents felt that the comfortable space for shade and rain was not enough, 6.25% of the respondents thought that it was OK, 6.25% of the respondents said that there was basically no comfortable space, and no respondents said that there was enough comfortable space (Figure 2-28).

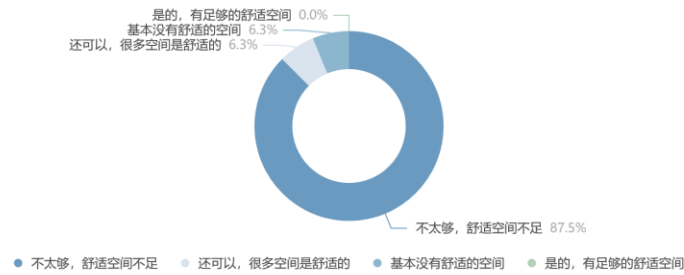


Figure 2-28 Whether the Shade and Rain Shelter Space Is Satisfied

(Source: Drawn by the Author)

Experience: As to whether the visiting and shopping environment in Chung Ying Street gives pleasant experience, 56.25% of the respondents said that it is not so pleasant, 37.50% of the respondents think it is pleasant, 6.25% of the respondents think it is not pleasant, and no respondents think it is very pleasant (Figure 2-29).

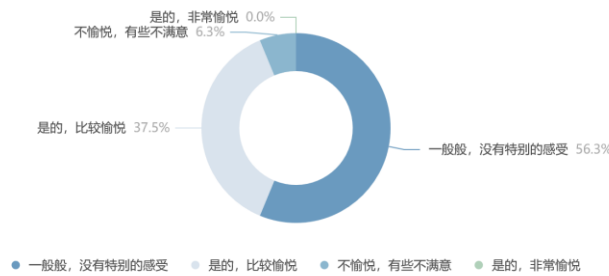


Figure 2-29 Chung Ying Street Overall Feeling

(Source: Drawn by the Author)

Satisfaction with supporting service facilities: Regarding whether the supporting service facilities (luggage storage, toilets, etc.) of Chung Ying Street can meet the needs, 50.00% of the respondents said that they are not very satisfied, 31.25% of the respondents said that they are not so satisfied, 18.75% of the respondents said that they are relatively satisfied, and no respondents think that they are completely satisfied (Figure 2-30).

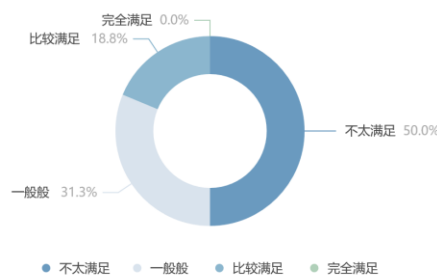


Figure 2-30 Satisfaction with Supporting Service Facilities

(Source: Drawn by the Author)

Dining options: As for whether to choose to eat in Chung Ying Street, 50.00% of

respondents said they would not eat in Chung Ying Street, 50.00% of respondents said they would consider eating in Chung Ying Street (Figure 2-31).

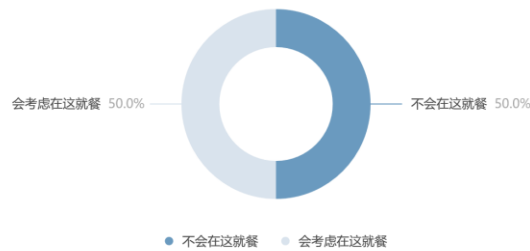


Figure 2-31 Whether to Choose to Eat Here

(Source: Drawn by the Author)

Dining experience satisfaction: If you choose to eat in Chung Ying Street, 50.00% of the respondents said that they are not so satisfied, 37.50% of the respondents think that they are not very satisfied, 12.50% of the respondents say that they are relatively satisfied, and no respondents think that they are completely satisfied (Figure 2-32).

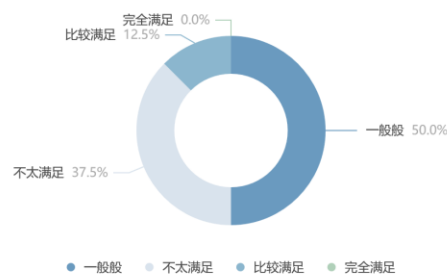


Figure 2-32 Dining Experience Satisfaction

(Source: Drawn by the Author)

Spatial perception of community communication and interaction: As to whether they felt interesting space for community communication and interaction during the visit and shopping in Chung Ying Street, 68.75% respondents said that there was no space to guide community communication and interaction, 18.75% respondents thought that there was little space to guide community communication and interaction. 12.50% of respondents said that there are some Spaces to guide community communication and interaction, and no respondents said that there are many Spaces to guide community communication and interaction (Figure 2-33).

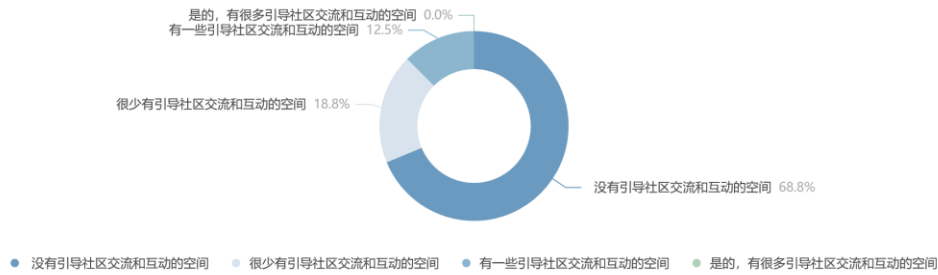


Figure 2-33 Community Communication and Interactive Spatial Perception

(Source: Drawn by the Author)

To sum up, the results of the data show that the lack of community experience of Chung Ying Street mainly includes the following problems: the continuous improvement of shade and rain shelter space, basic service facilities, dining quality and environment, and the general feeling of the space, leading to the poor experience of tourists.

2.4 Summary

The precursor of Chung Ying Street was the East River Market established under the "Treaty of the Bogue," serving as a marketplace in the Sha Tau Kok region. After Hong Kong was ceded to the British, Chung Ying became part of the Sino-British border. This ancient street, approximately 250 meters long and 4 meters wide, nestled against the Wu Tong Mountain, with its southern tip bordering Mirs Bay. It was once known as "Egret Alley" but was subsequently compelled to transform into "Chung Ying Street." This street has borne witness to the tumultuous years of foreign invasions and has recorded the successful implementation of the "One Country, Two Systems" policy. Chung Ying Street represents a crucial chapter in modern Chinese history.

Following an in-depth examination of the historical context of Chung Ying Street, a field survey was conducted, accompanied by a detailed documentation of its ground elements. Through this survey, coupled with mapping and analysis, Nolli-type maps and spatial interface classification diagrams for Chung Ying Street were created. During this research and mapping process, a series of ground-related issues were identified and summarized.

The analysis of the Chung Ying Street ground elements revealed several critical issues about its current state. Firstly, the fragmented state of the veranda interfaces and the "discontinuity" of commercial spaces must be addressed to create a more coherent and appealing environment. Furthermore, the interruption of ground continuity and the disorganized spatial functionality require better coordination and integration to enhance the practicality of Urban ground in Chung Ying Street. Additionally, the absence of accessibility

design should be addressed to increase inclusivity in the ground spaces of Chung Ying Street.

Regarding the spatial interfaces of Chung Ying Street, it is observed that the primary street interfaces lack the necessary enclosure. Furthermore, the discord between coarse-grained modern buildings and fine-grained pre-existing structures, along with Illegal expansion of buildings, negatively impacts the uniformity, spatial orientation, and legibility of the interfaces.

In addition, the results from the questionnaire surveys and interviews conducted with visitors provide substantial insights, indicating the need to enhance and improve the overall visitor experience of Chung Ying Street. Therefore, these issues identified during the study can serve as the foundation for urban design focused on improving the visitor experience, creating a more attractive, friendly, and sustainable environment within Chung Ying Street.

Chapter 3 Case Inspiration and Design Strategy Review

3.1 Case Selection and Inspiration

This study draws from the Urban Design Guidelines for Downtown Los Angeles, the Urban Ground Design Guidelines for the Gold Coast City in Australia, and research on the map-based representations of The Hague's inner city in the Netherlands. The selection of these case studies is based on their systematic provision of methods related to urban ground element design, encompassing various crucial aspects and factors. These are summarized and categorized into three levels of strategies for their applicability to the ground design of Chung Ying Street: structural coherence, visual quality, and comfort and sustainability (Figure 3-1).

1. Urban Design Guide for downtown Los Angeles, USA: Los Angeles is a multicultural and multi-functional city, and its urban design guide provides a multi-level urban ground strategy, emphasizing multiple urban ground elements, including streets, squares, sidewalks, transportation facilities, etc. Not just focus on one element, but consider how they work together to make up the overall experience of the urban ground.
2. Urban Ground Design Guidelines for the City of Gold Coast, Australia: Focus on guiding the construction of ground floor space areas and ground floor and urban building lower hinge, encourage developers and designers to integrate ground floor buildings into the urban ground to create a more coherent and multi-functional urban environment, emphasizing how ground space affects the quality and sustainability of the urban environment.
3. The Hague's inner city, Netherlands: The inner city of the Hague is the historic urban area at the center of the Hague, renowned for its unique architectural style, cultural heritage, and urban planning. Over the course of a century, from 1911 to 2011, changes in the map-based representations of The Hague's inner city have reflected the evolution and development of the urban fabric, emphasizing the continuity and significance of the city's block structure.

Overall strategy	Specific means	Result-oriented
Structural coherence 结构连贯性	Extension of the ground, echo and continuity of interfaces, continuity of texture 地面的延伸、界面的呼应与连续、肌理的连续	Restoration of space and functionality 修复空间与功能
	Sense of enclosure, articulation 围合感、衔接	
Visual quality 视觉质量	Readability, granularity 可读性、粒度	Visual qualities 视觉品质
	Ground floor treatment 建筑首层处理	
Comfort and Sustainability 舒适性与可持续性	Covering and urban furniture, landscaping, food 遮盖与城市家具、景观、食物	Sense of experience 体验感
	Sustainability 可持续性	

Figure 3-1 Case Studies for Strategy Generation

(Drawn by the Author)

3.2 Structural Coherence

3.2.1 Urban Ground Extension

(1) The public ground extends directly into the quasi-public ground space.

Located in the suburbs of Los Angeles, Santee Alley is a commercial alley with prominent pedestrian priority (Figure 3-2). Its street scale and business model are similar to Chung Ying Street. The area is vibrant and attracts a lot of pedestrian traffic. It is worth noting that Santee Alley's floor design adopts a unique way to extend the street floor directly into the interior of the shops on both sides, as if to invite pedestrians into this unique urban space. This design not only provides practical convenience, but also visually strong orientation, guiding pedestrians to flow through the street and explore the surrounding shops.



Figure 3-2 Santee Alley

(Source: <https://fashiondistrict.org/santee-alley>)

(2) Horizontal and vertical extension of the ground:

In the urban ground Design Guidelines for the City of Gold Coast, Australia, encouraging the placement of stairs, stepped platforms, street floors and other Spaces can significantly expand the public realm of the street, provide interest and richness through appropriate spatial layout and material selection, and encourage physical or visual public participation through the site. The vertical extension extends the public realm of the street upwards into the urban ground floor building form, inviting interaction and engagement - providing a seamless transition between the public and private realms (Figure 3-3).

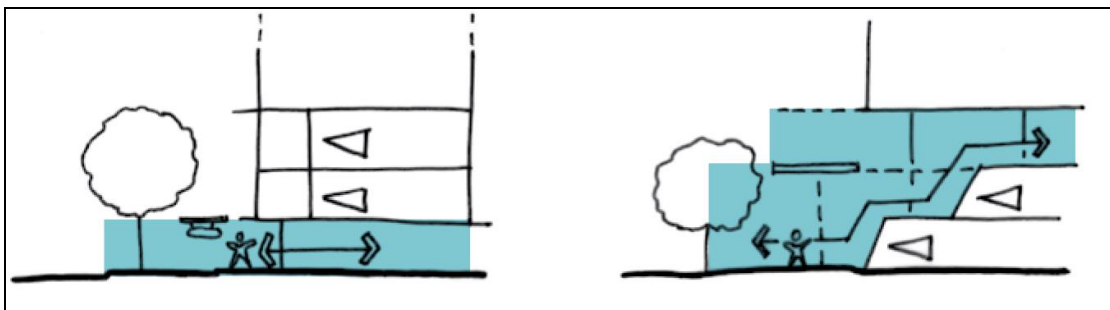


Figure 3-3 Two Extensions of the Ground: Horizontal and Vertical

(Source: Urban Ground Design Guidelines for the Gold Coast City)

3.2.2 Interface Echo and Continuity

The urban ground design guide for the City of Gold Coast, Australia states that as traditional plot widths create a rhythm in the urban fabric, which is important for the historical sense of the city, the urban ground responds to traditional lot widths. This should be truly represented in the architecture with corresponding functional, formal, and mediation Spaces. When built up to the boundary, the urban surface has substantial adjustments to the front interface. The continuous facade has a maximum size of 20 meters, and the limited depth of the surface effect cannot provide connection and accommodation for the building front (Figure 3-4).

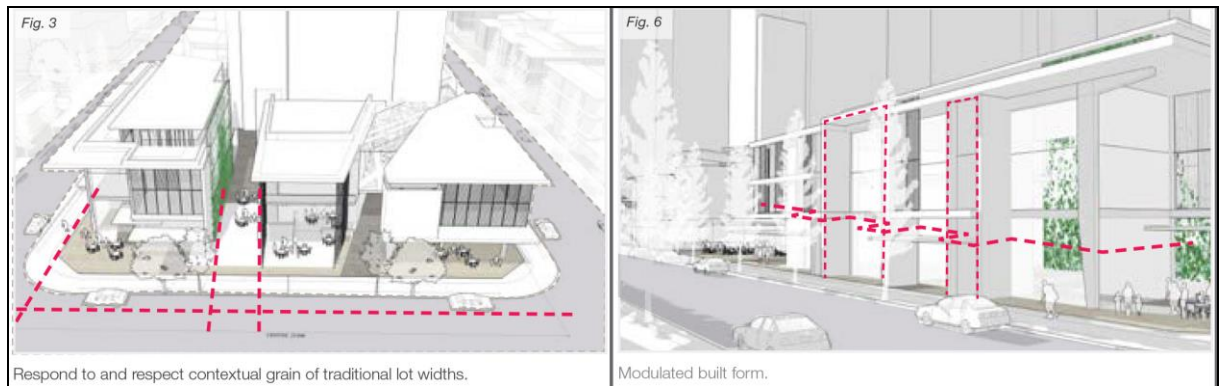


Figure 3-4 Historical Modulus

(Source: Urban Ground Design Guidelines for the Gold Coast City)

At the same time, the existing architectural form and material fabric of the opposite and adjacent facades reinforce the sense of address and cohesion of the street (Figure 3-5).

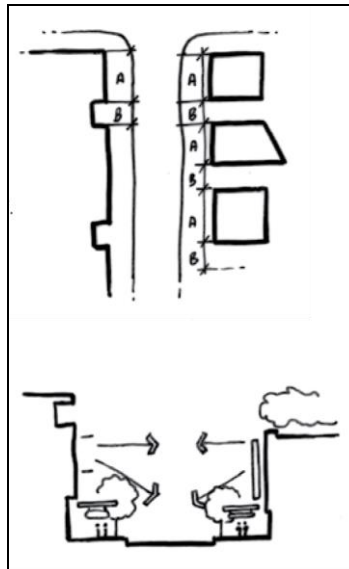


Figure 3-5 Interface Echo

(Source: Urban Ground Design Guidelines for the Gold Coast City)

3.2.3 Continuity of Fabric

The Hague's inner city is a historic district in the heart of The Hague, the Netherlands,

known for its unique architecture, cultural heritage and urban planning (Figure 3-6).

From 1911 to 2011, the change of the mapping graph of the relationship between the map and the ground of the inner city of The Hague reflects the evolution and change of the urban fabric, and the importance of the continuous fabric of urban blocks can be seen.

1911: During this period, the urban construction density was high, and the relationship map shows a relatively uniform and complete fabric structure. The spacing between buildings is relatively uniform and the street network is clearly visible. This represents the high degree of planning and organization of the city at that time.

1937: During this period, the city's street structure was adjusted and important roads were widened. The map of this period shows a clearer urban fabric, with wider streets and a degree of optimization in the distribution and density of buildings.

1961: On the basis of maintaining the original street structure, the density of the building was partially increased. A map of this period shows a relatively complete block, with the city still maintaining a clear fabric.

1988: This period saw major changes, with many blocks being replaced by large single buildings. This resulted in the loss of the sense of enclosure of some streets and the destruction of the original urban fabric.

2011: The city gradually restores the sense and fabric of the street. The map shows the city's renewed emphasis on street connectivity and spatial containment to create a more attractive and livable urban environment.



Figure 3-6 The Figure-ground map of the inner city of The Hague 1911-2011

(Source: Conrad C. Kickert^[52])

3.2.4 Enclosing and Connecting

The ratio of the height of the building to the width of the street creates a sense of closure in the public areas of the street. The ratio of the width of the street to the height of the buildings on the ground is between 1:1 and 1:2. This aspect ratio provides sunlight to the street and maintains an open streetscape character. Maintaining a good ratio of building height to the street creates a sense of closure and improves the experience of the public realm (Figure 3-7).

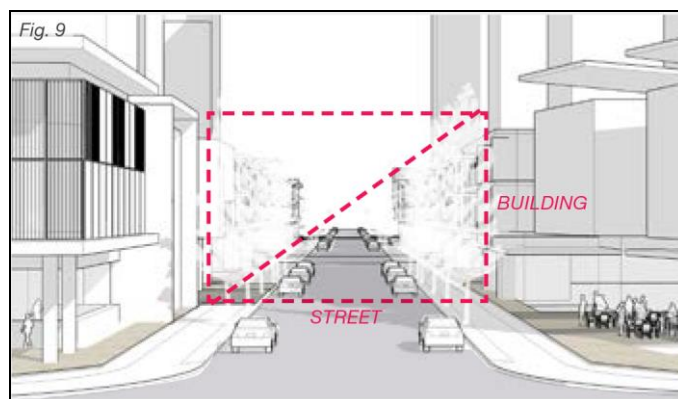


Figure 3-7 Good Containment Between 1:1 and 1:2

(Source: Urban Ground Design Guidelines for the Gold Coast City)

3.3 Visual quality

3.3.1 Building Ground Floor Treatment

The Urban Design guide for downtown Los Angeles in the United States mentions a lot about the treatment of the ground floor of a building.

(1) On the streets of the business world:

Overhangs, awnings and other transitional elements are incorporated into the ground floor to facilitate the movement of the walkway. Retail display, outdoor dining and awning. The underground space of the designated retail street should be further expanded for retail or other active use, to Orient the tenant space towards the street, and to maximize the storefronts and entrances along the pavement to maintain street level activity and facilitate pedestrian traffic. The image shows the parkway along the road, the clear travel path and the use of the remaining walkway for outdoor dining (Figure 3-8).



Figure 3-8 Commercial Spatial Interface

(Source: Urban Design Guidelines for Downtown Los Angeles)

(2) Living streets:

Residential units with separate entrances should have Windows on the ground floor facing the street; If a separate entrance to a residential unit along the street is the main entrance to the unit, it should be accessible, that is, at the same height as the sidewalk; The ground floor of the house can also have a public function with transparent Windows or serve as a recreation room. Individual unit entrances can be located a few feet above the sidewalk with porches and Windows facing the street. If blank walls are unavoidable, they can be compensated for with landscaping (Figure 3-9).



Figure 3-9 Commercial and Living Street Spatial Interface

(Source: Urban Design Guidelines for Downtown Los Angeles)

Common areas or recreation rooms with transparent Windows can also line the ground floor of a residential building. A good example is that individual unit entrances are a few feet above the sidewalk, with porches and Windows facing the street. Where blank walls are unavoidable, landscaping can compensate.

Zero retreat from the ground floor of the commercial, close to the professional office or living and working space to form a narrow retreat of the courtyard landscape, along the sidewalk with the entrance of the front yard retreat to create an attractive visual landscape (Figure 3-10).



Figure 3-10 Living Street Spatial Interface

(Source: Urban Design Guidelines for Downtown Los Angeles)

3.3.2 Legibility

The ground form of the city is adjusted to convey the function. Breaks in the building facade may coincide with building entrances, for example, adjustments may indicate where commercial use stops and residential use begins, and public expressions of function and use allow the public to read and connect with how the building wants to be used.

Ground floor retreatment: The architectural setback adjacent to the residential building provides a transition between the public and private spheres, allowing residents to have private spaces and have visual access to the public sphere. Entrance indicates the function and importance of the main building entrance. They should provide a clear, comfortable transition between exterior and interior spaces.

Sidewalk treatment, varies depending on the underlying treatment. The images are only used to illustrate the relationship between the sidewalk treatment and the elements of the ground floor of the building. A building that incorporates overhanging eaves, awnings and other transitional elements to promote sidewalk activity (Figure 3-11).

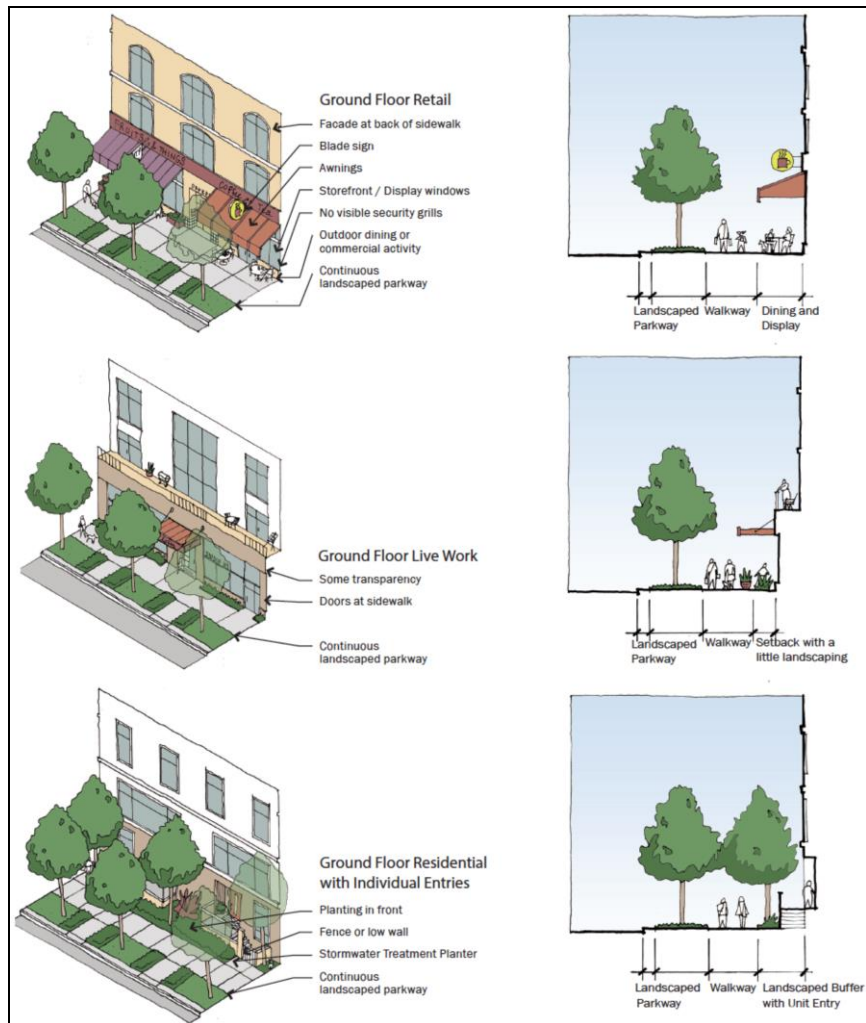


Figure 3-11 Ground Floor and Side Walk Treatment

(Source: Urban Design Guidelines for Downtown Los Angeles)

3.3.3 Granularity

"Granularity" is used to describe things that are made up of smaller elements, and "granularity" refers to the size of those elements. If the element is small, we call it "fine-grained," and if the element is large, we call it "coarse-grained," fine-grained urban areas are better for the walking experience and rarely take up entire blocks (Figure 3-12).



Figure 3-12 Fine and Coarse-grained Comparison

(Source: Urban Design Guidelines for Downtown Los Angeles)

There is also false granularity, where a large building is divided into many separate destinations at the street level to give the impression of a fine-grained city block that can solve the pedestrian problems of coarse-grained urbanization. The dead streets lacked any attraction to attract people. Not only are they unsightly, but the lack of people active in them often encourages crime (Figure 3-13).



Figure 3-13 False Granularity and Dead Streets

(Source: Urban Design Guidelines for Downtown Los Angeles)

Large projects should be segmented into a series of buildings of appropriate scale to meet pedestrian scale and walkability, and the building volume should be designed to enhance street walls with well-scaled elements or structures that are sensitive to the context of the community.

3.4 Comfort and sustainability

3.4.1 Covering and Urban Furniture

The Los Angeles Downtown Urban Design Guide mentions a lot about the setting of urban furniture.

Seating is an essential element of most open Spaces. Awnings and canopies shall be made of fabric, glass, metal or other permanent materials compatible with the building. To ensure pedestrian accessibility, open space should be provided at ground level. Any change in slope should be gradual and the line of sight should point directly to the open space. Ensure

that the landscape design of the open space provides shade, beauty and comfort to the users. Provide adequate seating in public open space. At least 50% of the seats need to be movable and 50% of the seats need to have backrests to promote the enjoyment and use of open Spaces. Deciduous trees should be planted to provide comfortable sun and shade.

Open Spaces on upper levels, including roof or terrace terraces, building cuts or residential courtyards, incorporate trees and other plants into permanent and temporary plants that will shade, reduce reflective glare, and add interest to the space (Figure 3-14).



Figure 3-14 Cover and Seat

(Source: Urban Design Guidelines for Downtown Los Angeles)

Parklets are a part of the street: can provide new outdoor gathering space and bring new activities to the street and nearby shops, usually the size of one or two parking Spaces, can be easily transformed into a variety of public Spaces where people can gather and socialize. In major cities across the United States, Parklets play an important role in community places, helping to encourage community interaction and create vibrant street life. Parklets introduce new streetscape features such as seating, plants, art and bike parking spots, with platforms extending into the street's parking lanes (Figure 3-15).



Figure 3-15 Parklet

(Source: Urban Ground Design Guidelines for the Gold Coast City)

3.4.2 Landscape

Boston's urban ground construction advocates the use of excess sidewalk areas in city blocks and the transformation of them into landscaped plazas. Landscaped plazas are public open Spaces created from underutilized Spaces on city streets that can quickly transform barren sidewalks into a lively gathering place and improve safety. Create landscaped plazas of appropriate scale where there is excess pavement and new public open space is needed. Landscaped squares can be changed in many different environments. Urban blocks typically lack open space and have high commercial density, both of which contribute to higher ground utilization. Mixed-use areas in the block may be good locations for conversion into landscaped plazas.

Proximity to restaurants and retail helps to increase the frequency of use of the plaza, which in turn helps to attract more pedestrian traffic. In residential areas without much public open space, especially in densely populated areas where residents do not have private yards, landscaped plazas can provide a welcome gathering space while also helping to ease pedestrian traffic. A few simple components can turn a barren stretch of road into an attractive gathering place. The most important elements are the ground materials and landscape Settings to clearly depict the space, as well as seating so that people passing by are encouraged to linger. They are public Spaces open to all (Figure 3-16).

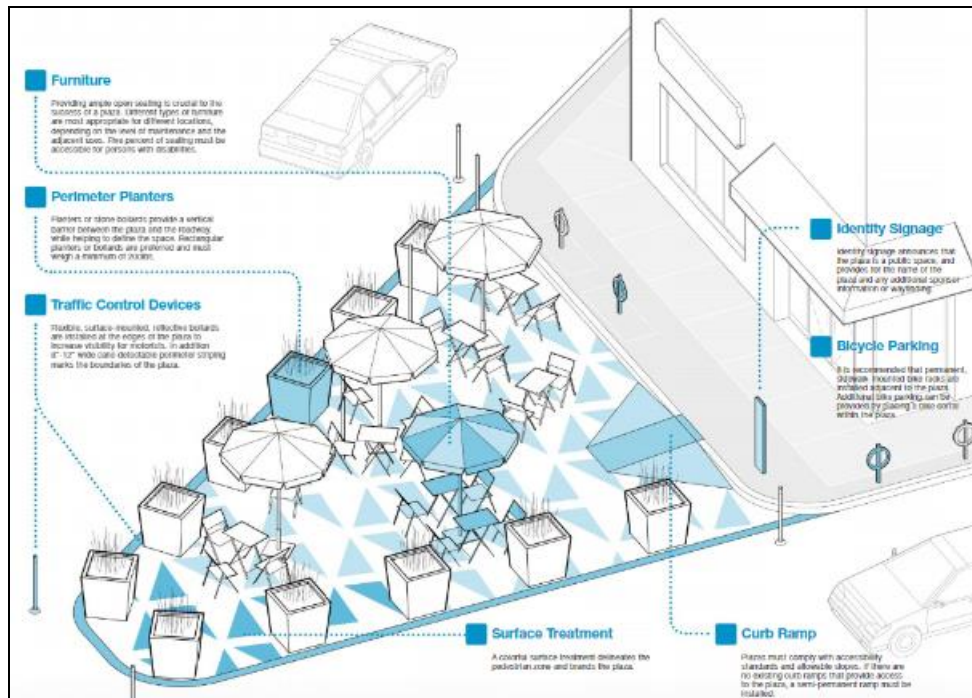


Figure 3-16 Landscape Square

(Source: Urban Ground Design Guidelines for the Gold Coast City)

3.4.3 Food

White talks about social life in small cities: If you want to create a vibrant place, put some food (Figure 3-17).



Figure 3-17 Food and Place

(Source: Urban Ground Design Guidelines for the Gold Coast City)

3.4.4 Sustainability

Where appropriate, shadows and shadows created by surface changes, overhanging eaves

and awnings are used to provide sustainable benefits and visual interest to facades exposed to sunlight (Figure 3-18).



Figure 3-18 Sustainability of the Building

(Source: Urban Ground Design Guidelines for the Gold Coast City)

Allow the urban ground to embrace the unique climate and be open to the public realm. The use of operable fences, Windows, sliding doors, corridors, balconies and terraces facing the street is encouraged. The development ensures that green space is returned to the city, reducing the heat island effect and embracing biological design and architecture.

Make full use of the rich natural environment to enhance the subtropical character of the Gold Coast. The city floor is an extension of the streetscape and contributes to the urban experience. By integrating and extending the landscape areas, the living green becomes more visible in the public realm experience. Optimize the use, positioning and engagement of the urban ground where it meets or connects with green open Spaces. Provide views, movement and physical connections to open, enhance and activate these Spaces. Green open Spaces on the urban ground integrate the public realm with nature (Figure 3-19).

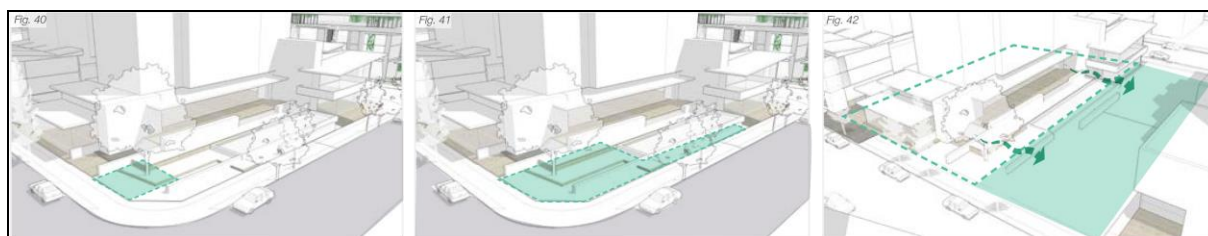


Figure 3-19 Sustainability of the Urban Ground

(Source: Urban Ground Design Guidelines for the Gold Coast City)

3.5 Summary

This chapter, through detailed case studies, including the urban design guidelines of Downtown Los Angeles in the United States, the City Ground Design Guidelines of Australia's Gold Coast, and the study of the ground relations in The Hague's inner city in the Netherlands, provides valuable experiences and strategies for the optimization of ground spaces in Middle Ying Street.

These cases offer a rich array of urban ground element design methods, covering various crucial aspects and important factors, providing insightful guidance for the ground design of Middle Ying Street. The summarized strategies can be categorized into three dimensions:

structural coherence, visual quality, and comfort and sustainability. Starting with structural coherence, this study explores design approaches such as ground extension, interface correspondence and continuity, coherence of texture, enclosure, and connection. On the level of visual quality, emphasis is placed on the treatment of the ground floor of buildings, readability, and granularity. Lastly, focusing on comfort and sustainability, the study discusses design methods related to shading, urban furniture, landscapes, food, and sustainability.

These strategies and design approaches can serve as comprehensive guidance for the rejuvenation of the ground spaces in Middle Ying Street, aimed at creating a more coherent, multifunctional, high-quality, comfortable, and sustainable urban environment. Through the application of these methods, it is possible to enhance the functionality and experience of Middle Ying Street's ground spaces, better meeting the needs of pedestrians. Additionally, these strategies have the potential to provide valuable insights for the ground design of other cities and historical areas.

Chapter 4 Urban Ground Regeneration and Design Presentation of Chung Ying Street, Sha Tau Kok

4.1 Design Framework and Overview

4.1.1 Design Framework

Based on the research in Chapter 2, a comprehensive analysis of the ground conditions in Chung Ying Street reveals issues on three levels.

- (1) **Functionality:** The original ground level differences were not designed with accessibility in mind, resulting in a rough transition. Numerous Illegal expansion of buildings have led to a chaotic urban fabric, unclear street layouts, poor site orientation, and readability. Infrastructure and supporting amenities are relatively lacking, and dining options are limited. There's also a lack of indoor public ground or recreational areas, leading many visitors to rest on outdoor steps.
- (2) **Visual Quality:** Commercial interfaces are disorganized and inconsistent. The introduction of large shopping centers around 2020 doesn't harmonize with the traditional shophouse architecture, showing significant incompatibility at their junctions. Negative living interfaces directly face the streets with a lack of uniformity and buffer zones.
- (3) **Visitor experience:** There is a lack of suitable resting areas and high-quality landscape design.

To address these site issues, Chapter 3 selects appropriate cases for in-depth analysis and summarizes them into three overarching strategies: coherence, visual quality, and comfort and sustainability. Each of these overall strategies has different solutions to address the three levels of site issues. Each strategy aims to enhance the quality of the ground spaces in Chung Ying Street and improve the urban experience.

In this chapter, our initial focus is on the holistic renovation and optimization of the ground plan's cartographic relationships and spatial interfaces within Chung Ying Street. This encompasses an exploration of disparities in various facets, specifically the street and alley systems, functional provisions, spatial interfaces, architectural fabric, landscape cultivation, and street furniture, both in the current state and post-design. Through a visually intuitive comparative analysis, the imperative for renovation becomes evident. Subsequently, we provide a comprehensive exposition of the renovation and optimization design proposals for four representative nodes within Chung Ying Street. These node-specific strategies distinctly exemplify the application of design methodologies synthesized in preceding chapters to

specific design contexts. The intent is to address site-specific issues and enhance spatial quality.

4.1.2 Design Overview

The conceptual proposals for the Master Plan, aerial view, and street scene images of Chung Ying Street express the comprehensive design vision for Chung Ying Street after renovation. The Master Plan and Aerial View feature labels from 1 to 4, representing the selected redevelopment nodes. Node 1, specifically, signifies the confluence of street-level commerce along Chung Ying Street and the internal district's leisure and dining businesses. Nodes 2 through 4 represent critical street corner spaces for entry from Chung Ying Street into the inner district.



Figure 4-1 Master Plan

(Source: Drawn by the Author)

The post-renovation Master Plan (Figure 4-1) illustrates the distinct street and lane structure, as well as architectural fabric of Chung Ying Street. Clearly visible on the west side of Chung Ying Street are small-scale, low-rise Hong Kong-style shops and residences. In contrast, the eastern side of Chung Ying Street features multi-story commercial Veranda structures, significantly larger in scale compared to the residential structures on the Hong Kong side. This difference in scale and style represents Chung Ying Street's most prominent spatial characteristic, setting it apart from other pedestrian shopping streets. Upon entering the inner lanes to the east of Chung Ying Street, one encounters a mixed-use area blending commerce and residential spaces. Residents and visitors converge at the Yu Deng Wu Square, serving as the heart of local life and a central area for the various leisure and dining establishments along Chung Ying Street. Further east lies the historic village of Sha Lan Ha, characterized by buildings that incorporate additional stories onto the original village structures. While these buildings have a similar footprint to Hong Kong-style village houses, they feature considerably more floors. Continuing eastward, one reaches the reclaimed land area created in the 1980s. Today, this area is occupied by enclosed residential communities, providing little in the way of public ground-level spaces. This region primarily consists of high-rise apartment buildings and villas. Beyond this point lies the open sea.

The Aerial View (Figure 4-2) offers a panoramic perspective from a vantage point in the southwest of the site, showcasing a distinct architectural scale comparison between the east and west sides of Chung Ying Street in Shenzhen and Hong Kong. This contrast in scale is a prominent feature of the area and serves as a focal point for the gathering of tourists. Along the main street, which spans approximately 250 meters, several ancient banyan trees flourish. These trees, alongside boundary markers and ancient wells, create a harmonious interplay, establishing the unique commercial ambiance that is etched in the memory of Chung Ying Street.

The Human-scale Street Renderings (Figure 4-3) vividly portrays the vibrant commercial activities along the street. The focal point of this image is the exuberant business environment. At the intersection of Che Ping Street and Chung Ying Street stands the No.3 Boundary Monument, which is a significant attraction for tourists seeking photo opportunities. Adjacent to the Boundary Monument is a border soldier's guard post, which holds equal importance for visitors. The public space beneath the Veranda on the opposite side of the guard post becomes a hub for crowds who gather to gaze at Hong Kong from this viewpoint.



Figure 4-2 Aerial View
(Source: Drawn by the Author)

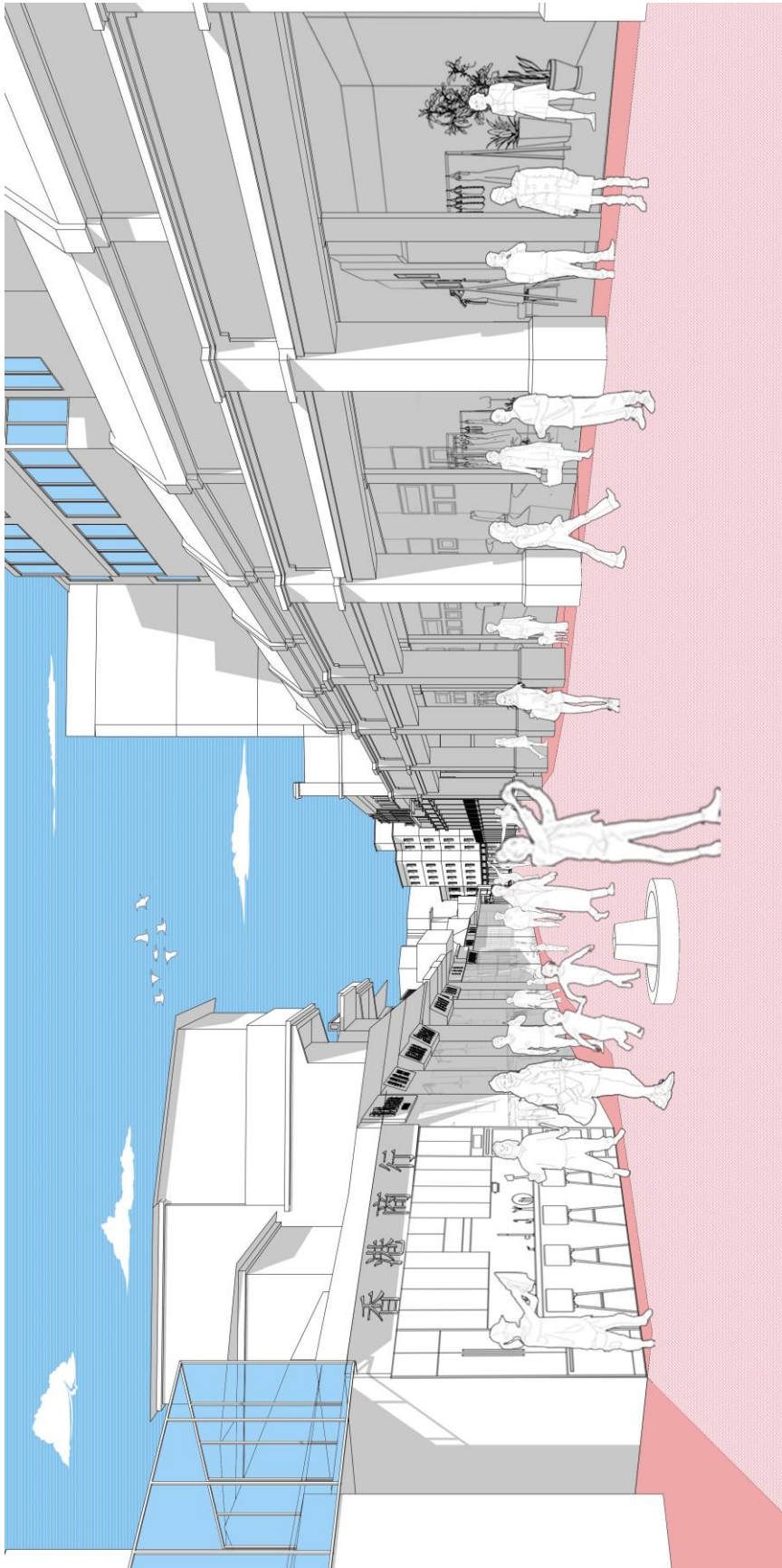


Figure 4-3 Human-scale Street Renderings
(Source: Drawn by the Author)

4.2 Optimization and Generation Strategies for Figure-Ground Relationships.

4.2.1 Optimized Figure-Ground Relationships of Chung Ying Street.

The optimization of the figure-ground relationship in Chung Ying Street is a comprehensive improvement process. Based on the existing Nolli-style map created after the site survey and in alignment with the vision to enhance the overall experience, it enhances Urban ground in Chung Ying Street in terms of functionality, visual quality, as well as comfort and sustainability (Figure 4-4).

Chung Ying Street, located on the Hong Kong-Shenzhen border, boasts a unique operational feature compared to other commercial districts - its opening hours. Due to strict border crossing regulations, the area's entry points are only open for a limited time each day, typically from 9 AM to 6 PM. As a result, businesses on both sides of Chung Ying Street operate within these specific hours.

In the Nolli-type map, locations like the church and the interior of the amphitheater, which are freely accessible to the public, are considered as urban public spaces just like the streets. Therefore, they are represented as blank "voids." Urban public spaces are areas that the public can enter and share, places where urban residents engage in daily life activities and participate in social interactions. During the opening hours for crossing the border, the commercial shops on Chung Ying Street are not just places for shopping; they are also significant tourist attractions, especially the old shops like "实惠" ("Shi Hui"), "兴记" ("Xing Ji"), "隆昌源" ("Long Chang Yuan"), which attract a large number of tourists. Thus, in this study, the commercial spaces on Chung Ying Street are considered to possess quasi-urban public space characteristics during specific time periods (from 9 AM to 6 PM). During non-opening hours, they are considered private spaces. Since the primary focus of this study is on the pedestrian experience, particularly that of tourists, the figure-ground relationship depicted reflects the spatial status between 9 AM and 6 PM. During this specific time frame, the usage rights of the commercial spaces on Chung Ying Street are considered public, but ownership remains private. Hence, in the figure-ground relationship, they are represented as gray, while private residences and other private spaces are depicted as black, and streets, squares, and other urban public spaces are represented as white.



Figure 4-4 Chung Ying Street Nolli-type Map

(Source: Drawn by the Author)

4.2.2 The Optimization of Streets & Square System

In the current state of Chung Ying Street, there is a significant number of later additions and structures on the ground that encroach upon public ground space, causing interruptions in certain street and alley structures. During the renovation, the primary consideration is to ensure the continuity of street and alley structures. Ground optimization begins by reclaiming these areas for public use and preserving the original street and alley fabric. Additionally, by extending streets indoors at suitable Veranda interfaces, a portion of indoor space is transformed into public passageways, expanding public ground to attract pedestrians for movement and interaction, thereby creating and activating backstreets (Figure 4-5).



Figure 4-5 Existing and Proposed Road & Square System

(Source: Drawn by the Author)

4.2.3 Continuity of Functional Distribution

Along Hai Bin Street, scattered life-oriented small businesses such as fast food, hair salons, and convenience stores can be found. Since tourists mainly gather on Chung Ying Street, there are significantly fewer people entering Sha Tou Jiao Street and Heng Xing Street. Despite shop signs on both sides of these two streets, numerous vacant spaces create a rather desolate visual appearance. Regarding public service facilities, there is only one public restroom on Hai Bin Street, leading to long queues during peak times.

After the renovation, most retail businesses are concentrated on Chung Ying Street, Yang He Street, Sha Tou Jiao Street, and Heng Xing Street. Cultural and leisure businesses are focused around Yu Deng Wu Square and on both sides of Hai Bin Street. Public service spaces, including restrooms, luggage storage, and resting areas, are strategically placed at the fractured segments of commercial shops along the mid and southern sections of Chung Ying Street. The redesigned public services are evenly distributed to comprehensively cover the entire site (Figure 4-6).

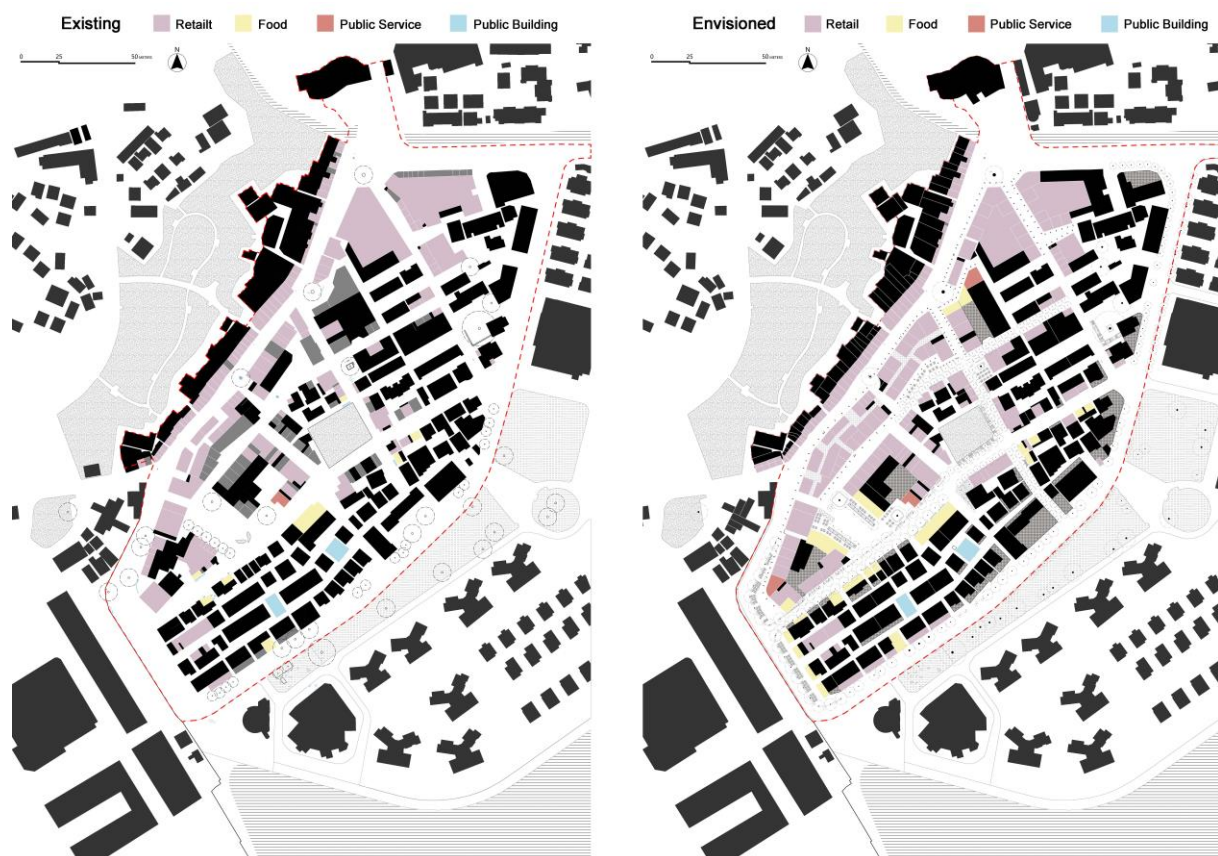


Figure 4-6 Existing and Proposed Function Distribution

(Source: Drawn by the Author)

4.2.4 Continuity of Spatial Interfaces

The red lines represent active commercial interfaces, while the blue lines represent active residential interfaces. Prior to the renovation, the continuity of active interfaces between the commercial and residential areas along Chung Ying Street was weak, often interrupted. After the renovation, the main street interfaces are complete, presenting active commercial and residential interfaces open to the public (Figure 4-7).



Figure 4-7 Existing and Proposed Spatial Interfaces

(Source: Drawn by the Author)

4.2.5 Architectural Fabric Restoration

Due to the overlay of constructions from different periods and irrational expansions, certain areas present inharmonious architectural textures in the map. Particularly, on the west side of the Yu Deng Wu Square, there's a distinctive 3-story bastion-style commercial building that marks the corner of Chung Ying Street and Haibang Road. However, there's a nearly 20-meter gap before a 5-story office building in the Shalanyap Village is constructed on Haibang Road's interface. In this gap, a temporary building and chaotic backyard occupy the space, significantly affecting the spatial quality and street functionality.

After the renovation, the restoration of architectural texture creates more enclosed spaces. The interface between the streets and the square becomes more harmonious and complete, presenting a neat and distinctive street character (Figure 4-8).



Figure 4-8 Existing and Proposed Architectural Fabric

(Source: Drawn by the Author)

4.2.6 Vegetation System Refurbishment

The existing landscape on the site lacked a cohesive design. Although there are over ten banyan trees in Chung Ying Street with a history of more than 50 years, and even centennial ancient banyan trees bearing witness to the changes in the street, there was no high-quality landscape designed specifically for these ancient trees.

In the post-renovation landscape system, the focus has shifted to preserving and emphasizing these ancient trees. Each ancient tree has been transformed into a node, forming a small plaza where visitors can relax and enjoy various commercial services beneath their shade. Additionally, streets with a more residential character, such as Hai Hong Street, Heng Xing Street, and Huan Hai Road, now feature tree plantings along both sides. This not only creates shaded spaces but also avoids impeding the bustling commercial activities (Figure 4-9).



Figure 4-9 Existing and Proposed Vegetation System

(Source: Drawn by the Author)

4.2.7 Urban Seating Furniture

In the pre-renovation site, there was almost no urban public rest furniture that could cater to a large number of tourists, or the rest seats placed in an open space were directly exposed to the sun, causing many people to choose to sit on the steps of the Veranda and next to the shady trees. After the renovation, all seats will be shaded from direct sunlight and face premium views (Figure 4-10).

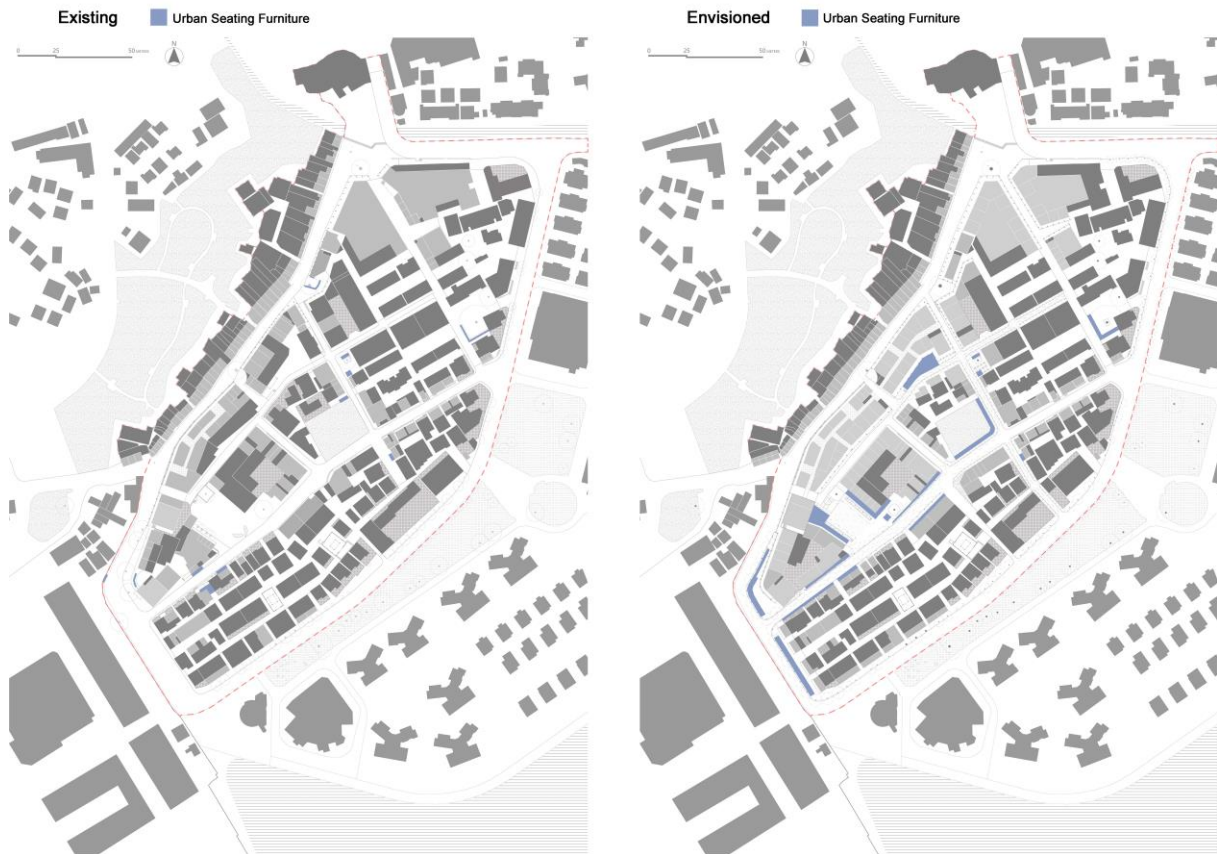


Figure 4-10 Existing and Proposed Urban Seating Furniture
(Source: Drawn by the Author)

4.3 The Optimization of Spatial Interfaces and the Creation of Spatial Interface Patterns

4.3.1 Before and After Comparison of Site Space Interface Transformation

In accordance with the research conducted in Chapter 2, which entailed a comprehensive examination of on-site spatial interfaces, as well as a detailed analysis of the site's current cross-sectional and longitudinal sections, the interface space types within the Chung Ying Street area have been classified into four categories: Veranda commercial space interfaces, lifelike commercial space interfaces, positive and negative residential space interfaces, and open space interfaces. Among these categories, cross-sectional and longitudinal sections containing the most significant nodes have been selected (Figure 4-11).

Building upon the strategies and methodologies outlined in Chapter 3, optimization and design have been applied to these two longitudinal sections (Figure 4-12, Figure 4-13). Four highly representative nodes within the site's longitudinal section were chosen for specific transformation and presentation. The renovation of space interfaces in these sections entails alterations to ground-level spaces. By incorporating appropriate functions, seven fundamental spatial operation techniques were systematically employed during the design process (Figure 4-11), culminating in the proposed post-renovation configuration.

The transformation of section A-A primarily focuses on the enhancement of space interfaces within Yu Deng Wu Square, the creation of double Veranda interfaces on the east side of Chung Ying Street and the west side of Yang He Street. The transformation of section B-B primarily addresses the Chung Ying Street South End Landscape Leisure Square, the continuation of Veranda interfaces at the 6th Boundary Stone, and the control and perpetuation of the scale of Qiao Tou Street Mall (Figure 4-12, Figure 4-13).

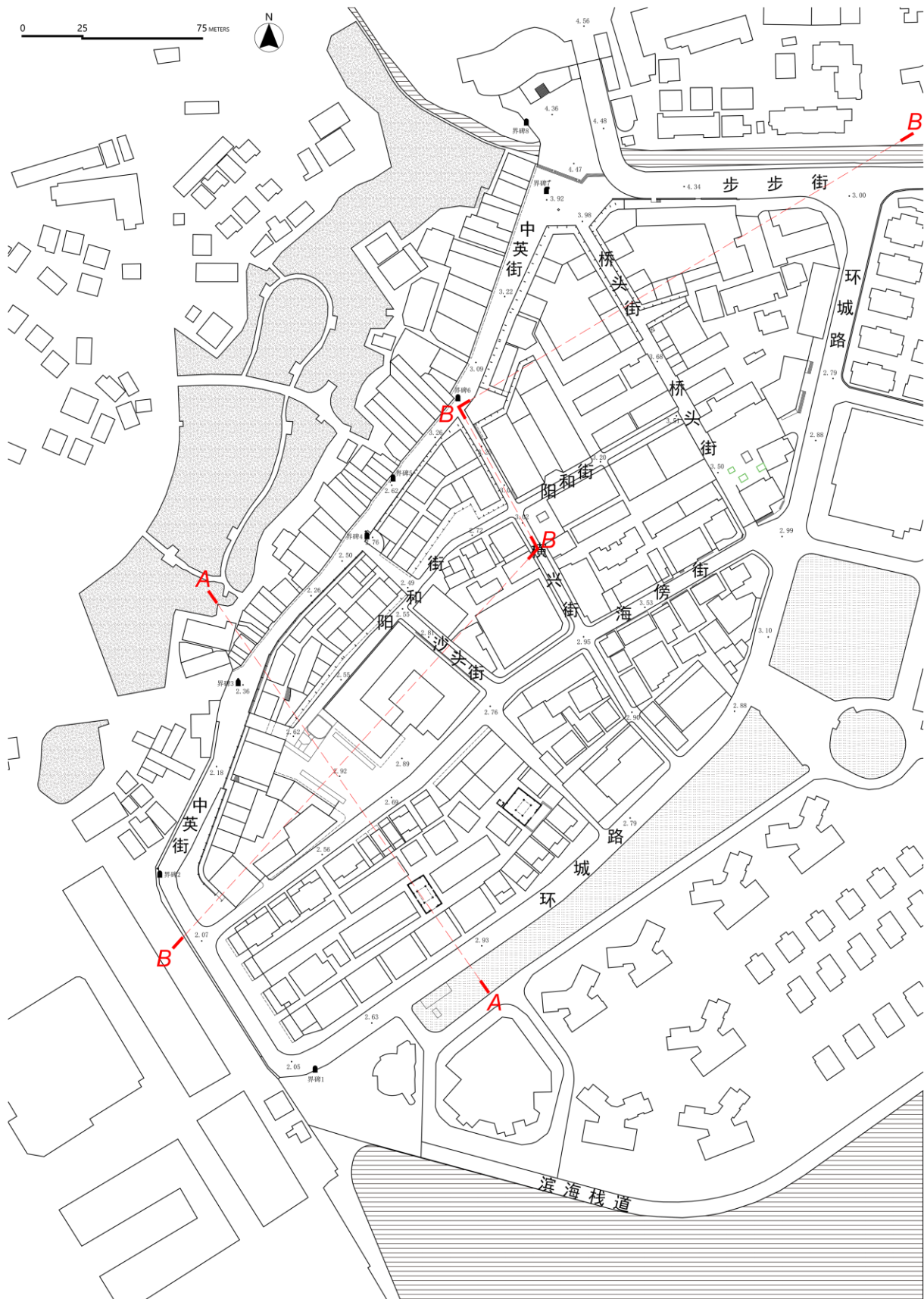


Figure 4-11 Chuang Ying Street Ground Plan

(Source: Drawn by the Author)

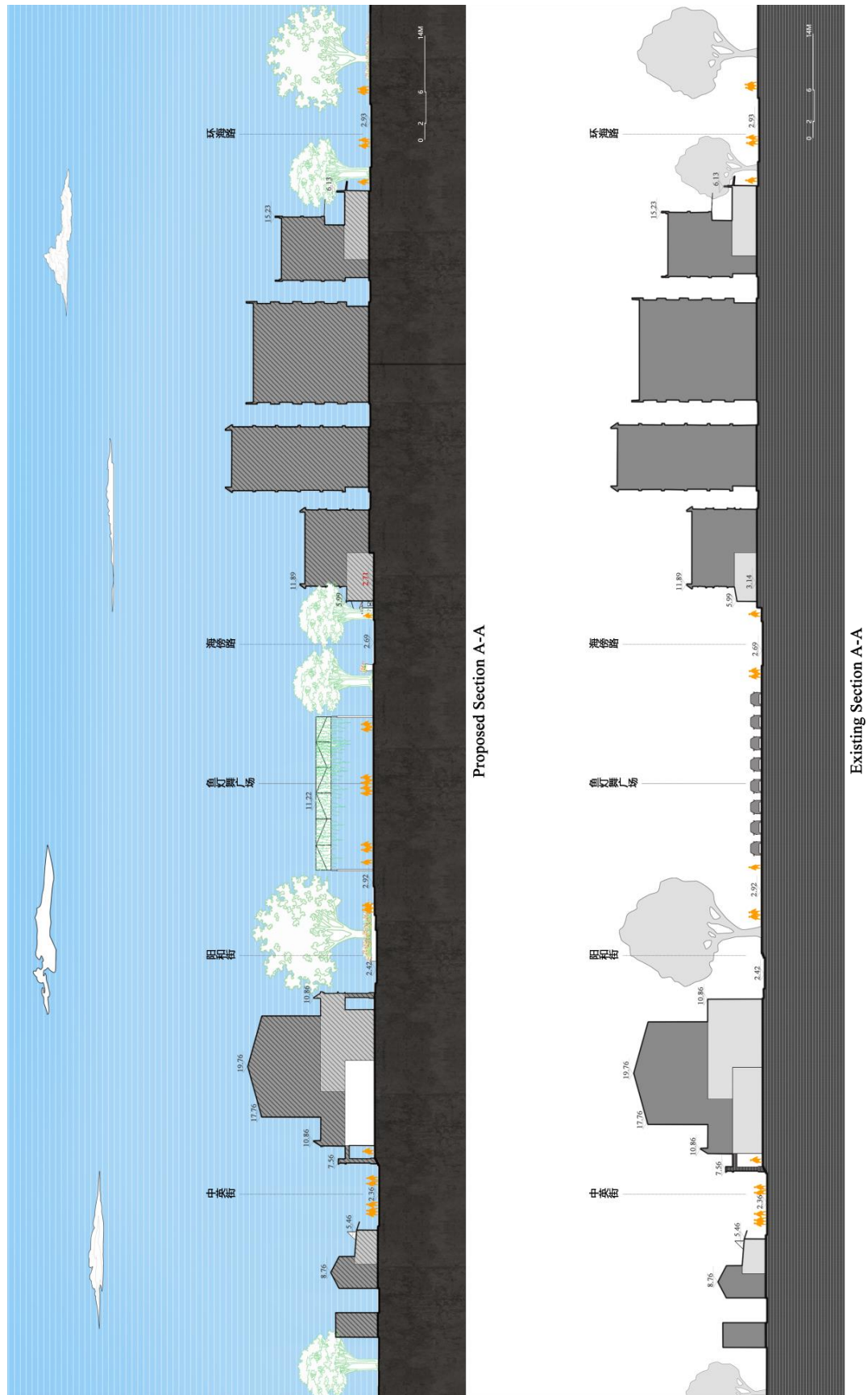


Figure 4-12 Existing and Proposed Section A-A

(Source: Drawn by the Author)

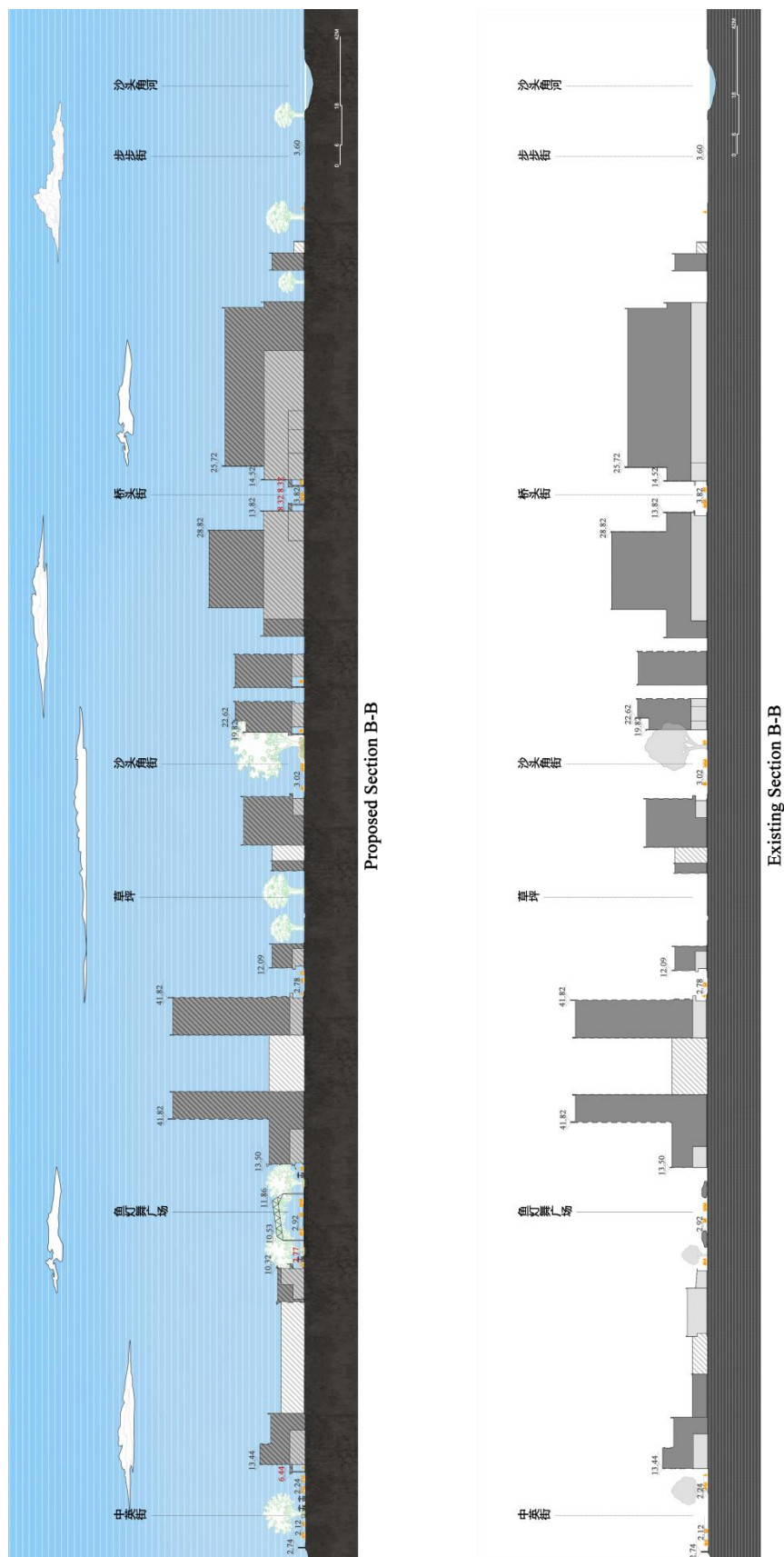


Figure 4-13 Existing and Proposed Section B-B
(Source: Drawn by the Author)

4.3.2 Two typical spatial interface patterns

In Chapter 2, the interface spatial types within the Chung Ying Street area were meticulously categorized into four types: Veranda Commercial Spatial Interface, Livelihood-Oriented Commercial Spatial Interface, Positive and Negative Residential Spatial Interface, and Open Spatial Interface.

However, in a more concise design language, they can be grouped into two primary categories: Veranda Building Commercial Spatial Interface Pattern and Active Living Space Interface Pattern. The spatial interface distribution (Figure 4-14) shows the commercial interfaces in red and the living interfaces in blue. It can be observed from the figure that the redesigned main street interfaces are more enclosed and actively engage with the street.

Veranda Building Commercial Spatial Interface Pattern (Figure 4-15) are typically represented by the structures flanking both sides of Chung Ying Street. The ground floor of these structures faces the street directly through Verandas or storefronts. The pathways beneath the Verandas and shops are open public spaces. The street-facing shops serve as quasi-public spaces during specific periods. Active Living Space Interface Pattern (Figure 4-16) are exemplified by the self-built houses in Sha Lan Ha Village. The ground floor of these houses forms enclosed courtyards facing the street or extends into street-side retail shops. This architectural pattern engages with the street and acts as a mediation space between public and private domains.



Figure 4-14 Two Spatial Interface System

(Source: Drawn by the Author)

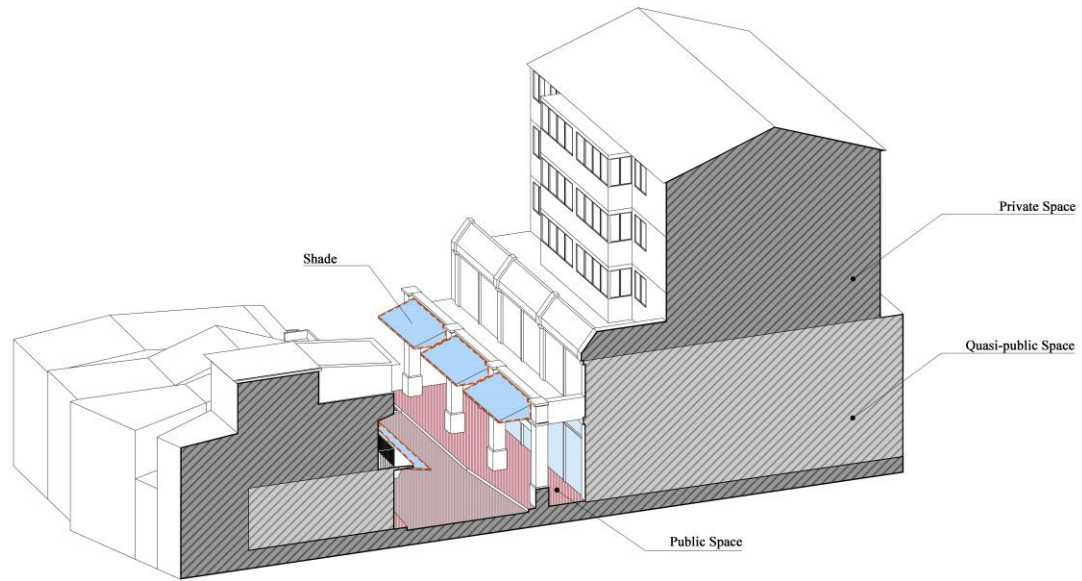


Figure 4-15 Veranda Building Commercial Spatial Interface Pattern
(Source: Drawn by the Author)



Figure 4-16 Active Living Space Interface Pattern
(Source: Drawn by the Author)

4.4 Node Transformation Presentation

Node transformation refers to the application of the overall strategies and specific techniques summarized in Chapter Three to specific design sites. This also involves considering and addressing the specifics of each space. In general, the spatial treatment of the ground can be categorized into the following seven types, as illustrated in Figure 4-17.

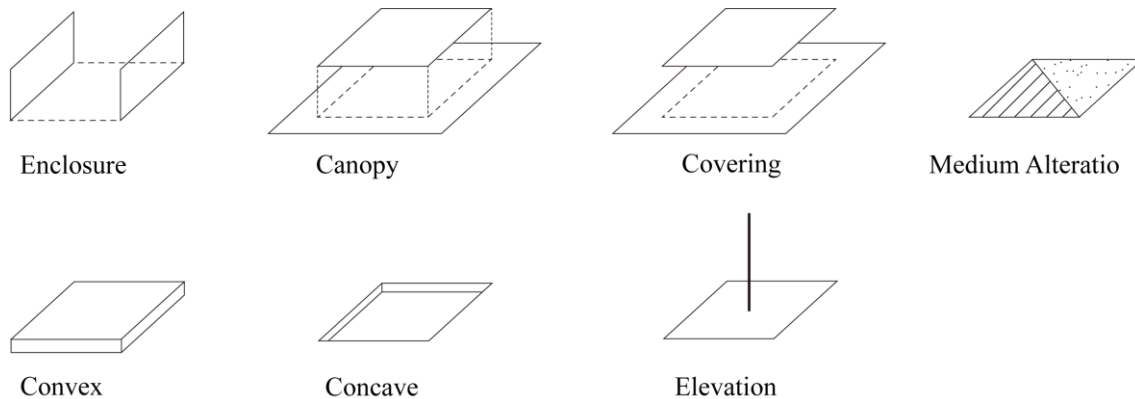


Figure 4-17 Spatial Ground Regeneration Techniques

(Source: Drawn by the Author)

- (1) Concave: This approach involves creating recessed or sunken areas on the ground to collect and manage rainwater. Examples of concave treatment include rain gardens and drainage facilities. In urban planning, concave areas are often used for rainwater collection, flood prevention, or to create landscape features.
- (2) Convex: Convex treatment guides people's views or activities by creating raised or elevated areas on the ground. For example, stages are typically designed with convex elements to capture the audience's attention, making performances more visually impactful.
- (3) Covering: This treatment involves changing the appearance and function of the ground by overlaying objects or materials. Trees and building rooftops are typical examples of ground coverings that can provide shading, rain protection, or create a unique environment.
- (4) Enclosure: Enclosing the ground is done by using buildings, walls, or other structures to define and delineate the boundaries of the ground space. This treatment can create privacy and a sense of security, and it can be used to define the scope of a building or site.
- (5) Elevation: Changing the height and shape of the ground is achieved by raising or elevating structures. Elevators or platform structures are examples of elevation

treatment; they can transport people from one level to another, altering their interaction with the ground.

- (6) Canopy: Canopy treatment involves creating coverings or shelters on the ground to provide shade or protection. Overhead walkways and awnings are common canopy treatments, offering shelter in outdoor spaces and improving people's comfort.
- (7) Medium Alteration: This treatment involves changing the ground medium, such as adding water, grass, or paving materials. This can alter the texture, function, and appearance of the ground. For instance, water features, lawns, and paved pathways are examples of medium alteration.

The optimization of the function and experience of the ground interface spaces in Chung Ying Street draws on strategies and methods from reference case analyses, as well as these seven space treatment approaches. These are applied based on specific design requirements and site conditions to create a diverse range of ground functions and experiences.

There are four transformation nodes within the site, representing the most representative spatial nodes of various space interface types, distributed at specific locations in the site (Figure 4-18).



Figure 4-18 Distribution Diagram of Design Nodes
(Drawn by the Author)

4.4.1 Yu Deng Wu Square and the Backstreet of Chung Ying Street

Yu Deng Wu Square connects to Chung Ying Street through a passage that goes through the Veranda buildings. After the renovation, this Veranda forms a double Veranda interface, which can divert the high pedestrian traffic from Chung Ying Street into Yang He Street (Figure 4-19, Figure 4-20, Figure 4-21, Figure 4-22, Figure 4-23).

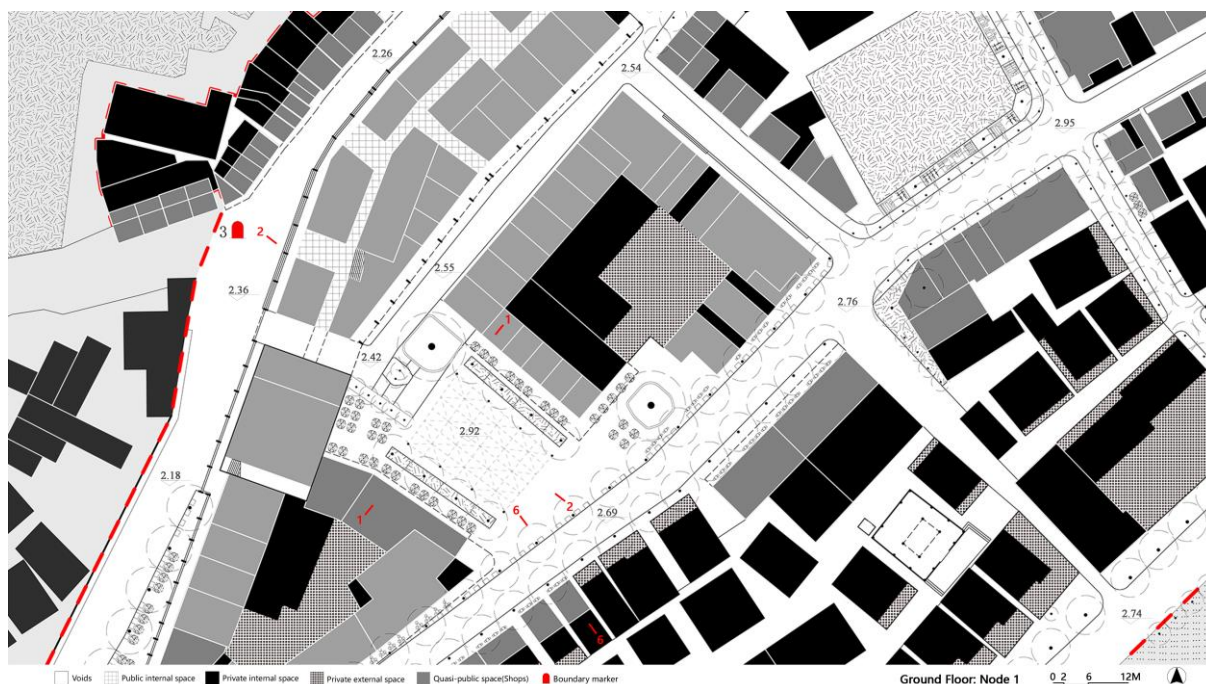


Figure 4-19 Ground Floor of Yu Deng Wu Square

(Source: Drawn by the Author)

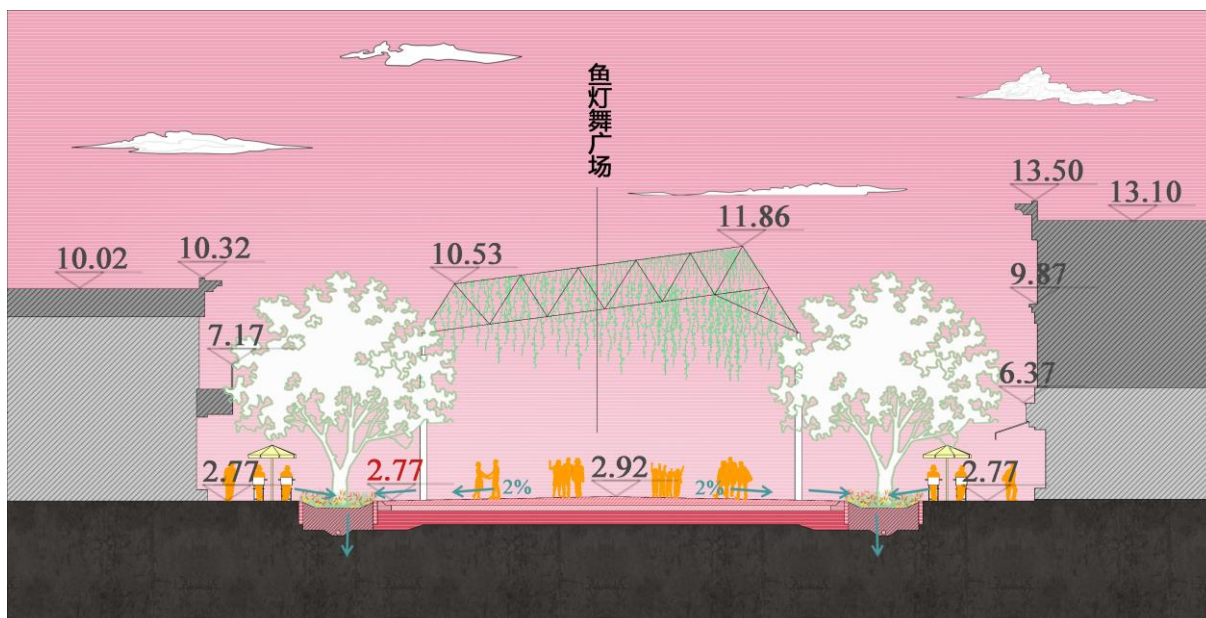


Figure 4-20 Section 1-1 (After Regeneration)

(Source: Drawn by the Author)

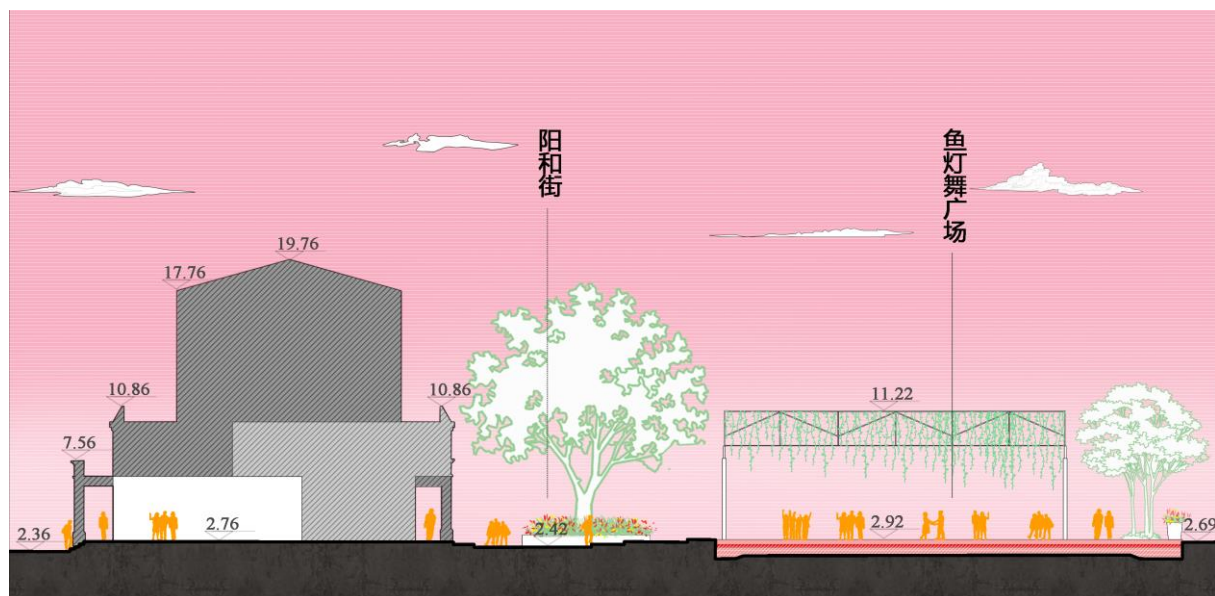


Figure 4-21 Section 2-2 (After Regeneration)

(Source: Drawn by the Author)

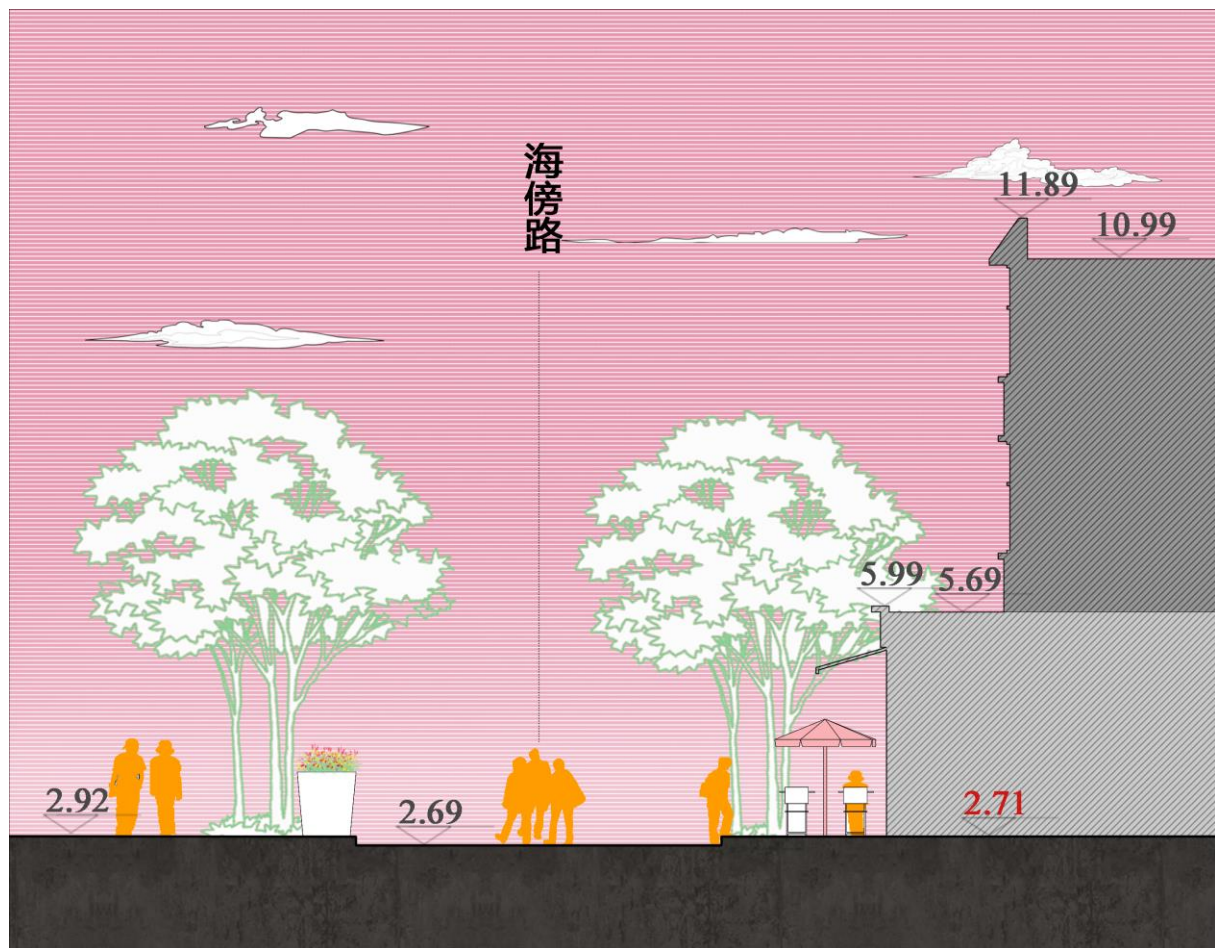


Figure 4-22 Section 6-6 (After Regeneration)

(Source: Drawn by the Author)

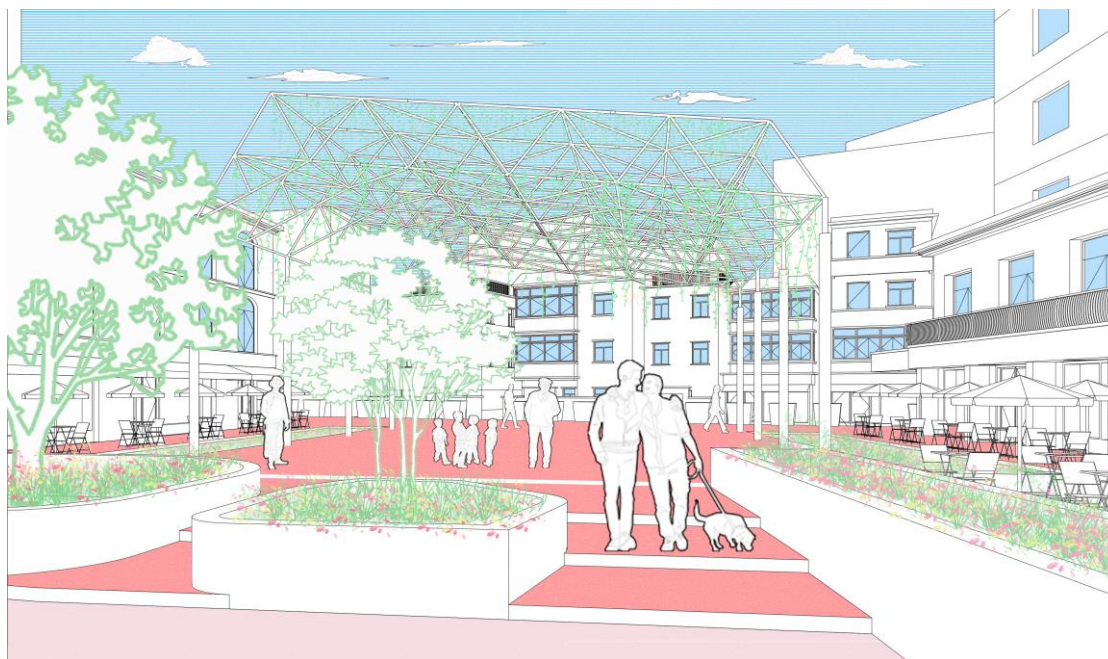


Figure 4-23 Yudengwu Square

(Source: Drawn by the Author)

The transformation of Yu Deng Wu Square into a leisure and entertainment destination is enhanced with features like a rain garden, ancient tree landscapes, pergola plantings, and outdoor dining facilities. These sustainable spaces are designed to attract more activities and create a vibrant atmosphere.

4.4.2 No. 6 Boundary Monument Square

No. 6 Boundary Monument Square is home to a large Banyan tree and is a focal point where numerous visitors gather on Chung Ying Street. After the renovation, the three sides surrounding the Banyan tree continue as colonnade interfaces, creating a strong sense of enclosure and a welcoming ambiance for visitors (Figure 4-24, Figure 4-25, Figure 4-26).

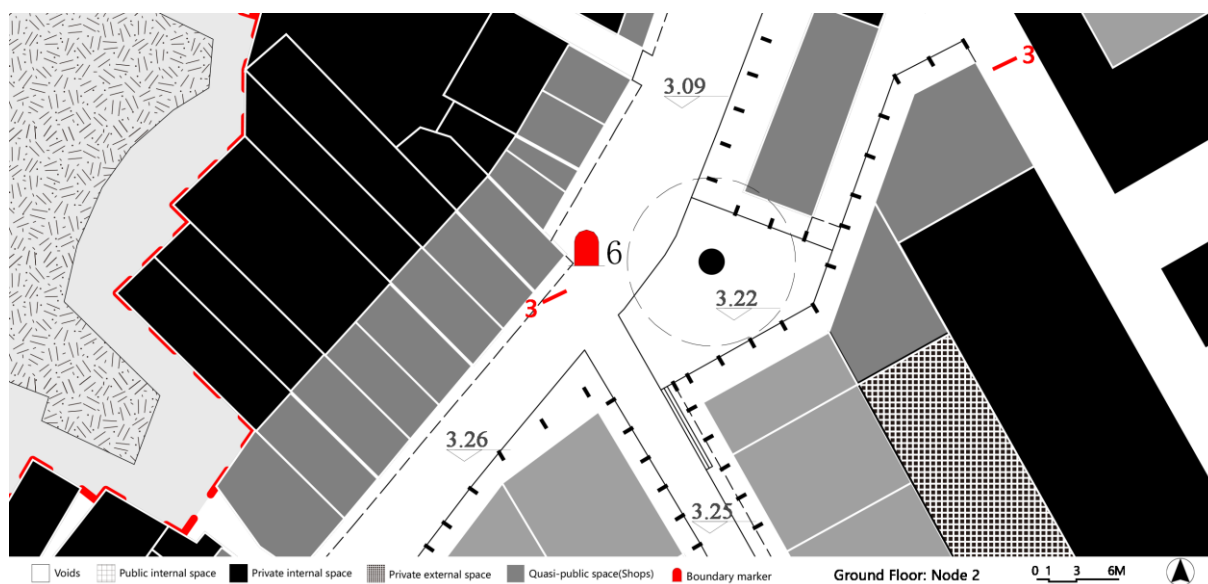


Figure 4-24 Ground Floor of No. 6 Boundary Monument Square

(Source: Drawn by the Author)

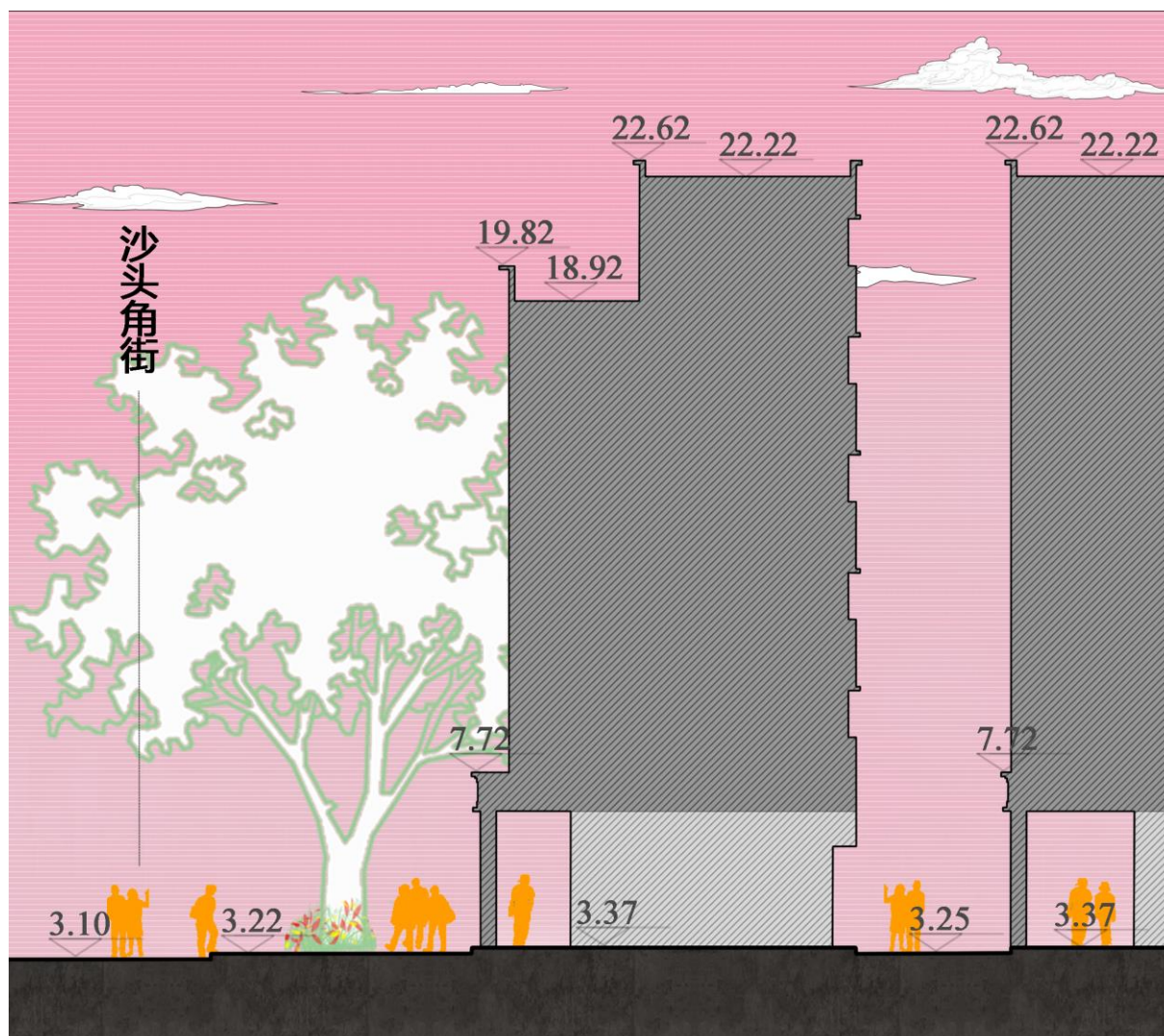


Figure 4-25 Section 3-3

(Source: Drawn by the Author)

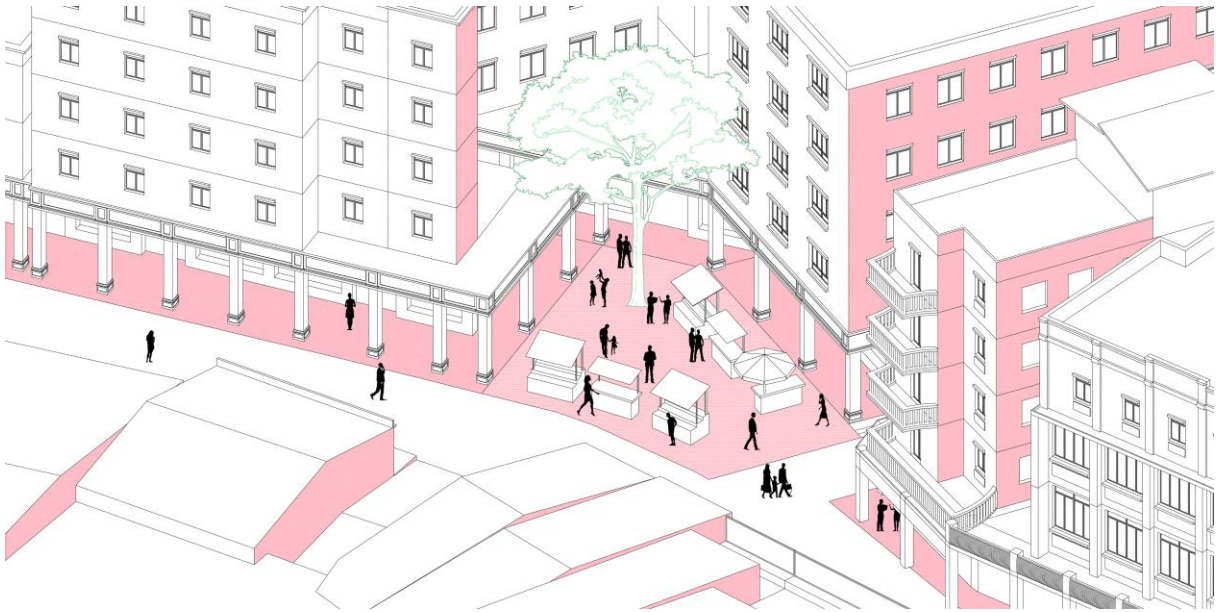


Figure 4-26 No. 6 Boundary Monument Square

(Source: Drawn by the Author)

4.4.3 Roadside Landscape Leisure Square

This is the southern end of Chung Ying Street, where the street widens and curves. Utilizing the extra road space, a dedicated landscape leisure square has been created for tourists to relax. Across the square is the border wall and the No.2 boundary monument, providing a view of the reliefs on the wall and the boundary monument on the ground through the street (Figure 4-27, Figure 4-28, Figure 4-29).

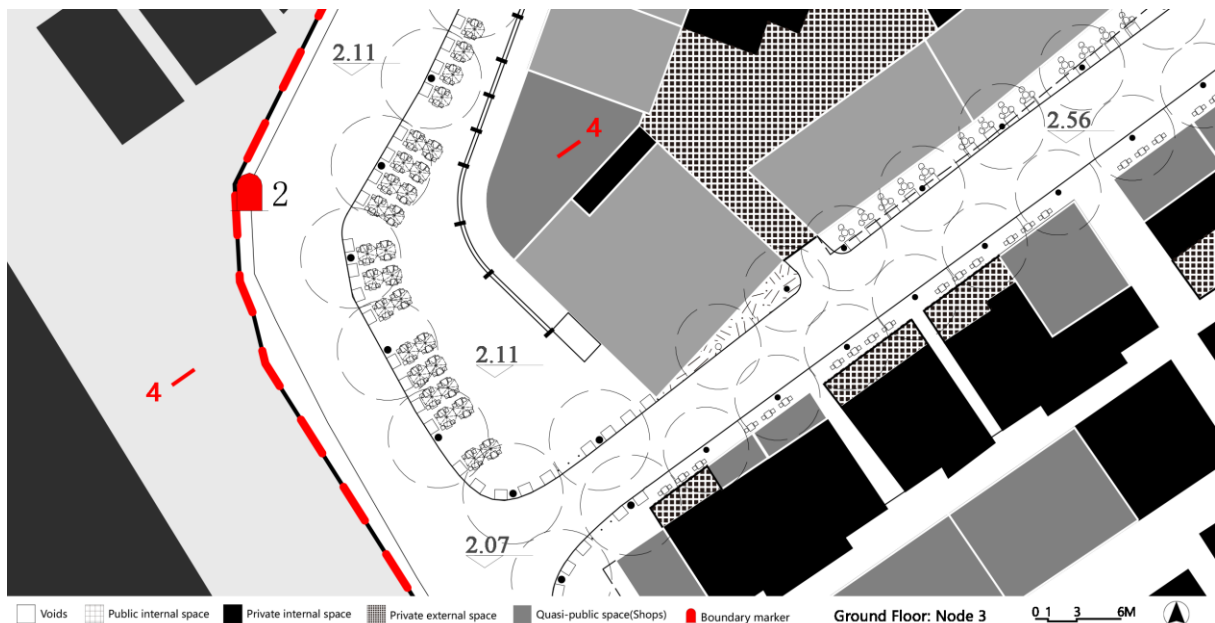


Figure 4-27 Roadside Landscape Leisure Square

(Source: Drawn by the Author)

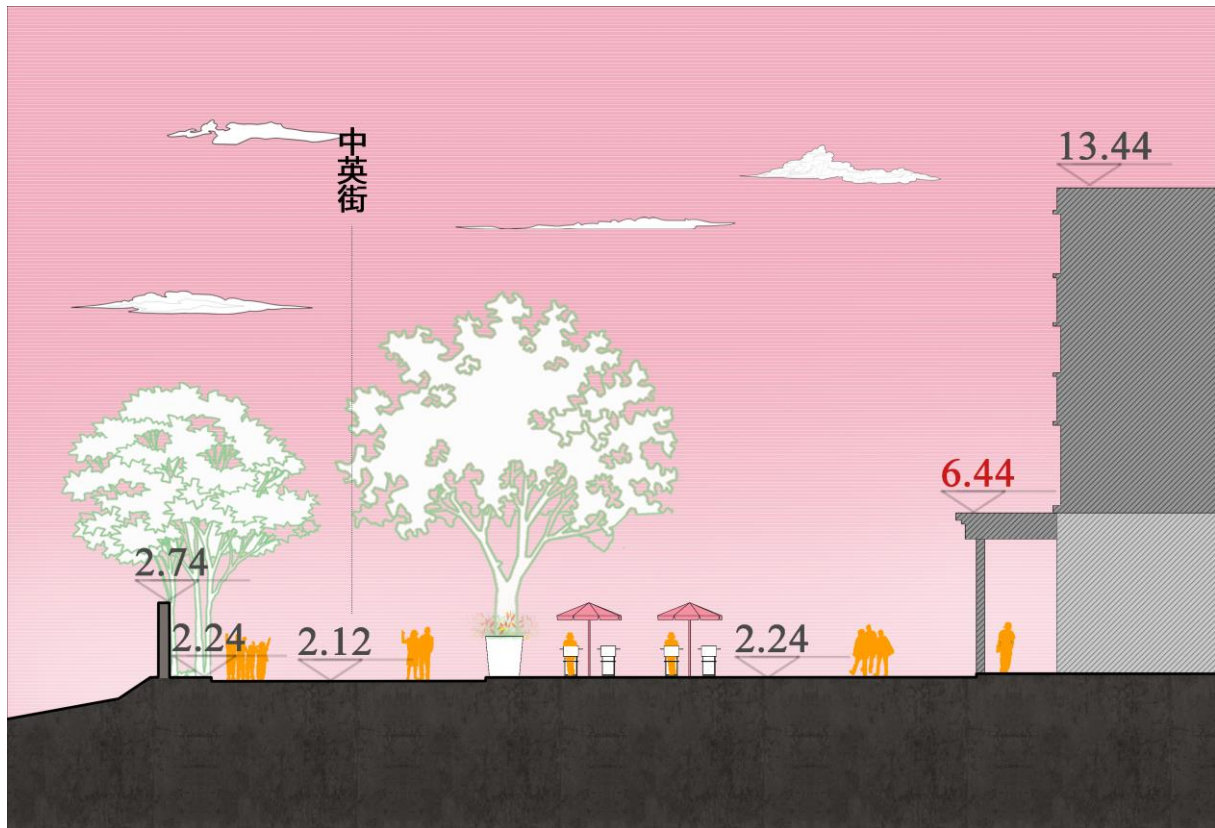


Figure 4-28 Section 4-4
(Source: Drawn by the Author)



Figure 4-29 Roadside Landscape Leisure Square
(Source: Drawn by the Author)

4.4.4 Quan Gang Hui Shopping Mall

The Quan Gang Hui Shopping Mall is situated at the intersection of the northern end of Chung Ying Street and Bridge Street. The building's size and footprint are substantial, which differs significantly from the original street and architectural character. After the renovation, the ground floor of the mall continues the Veranda interface found on Chung Ying Street, with the scale being significantly reduced (Figure 4-30, Figure 4-31).

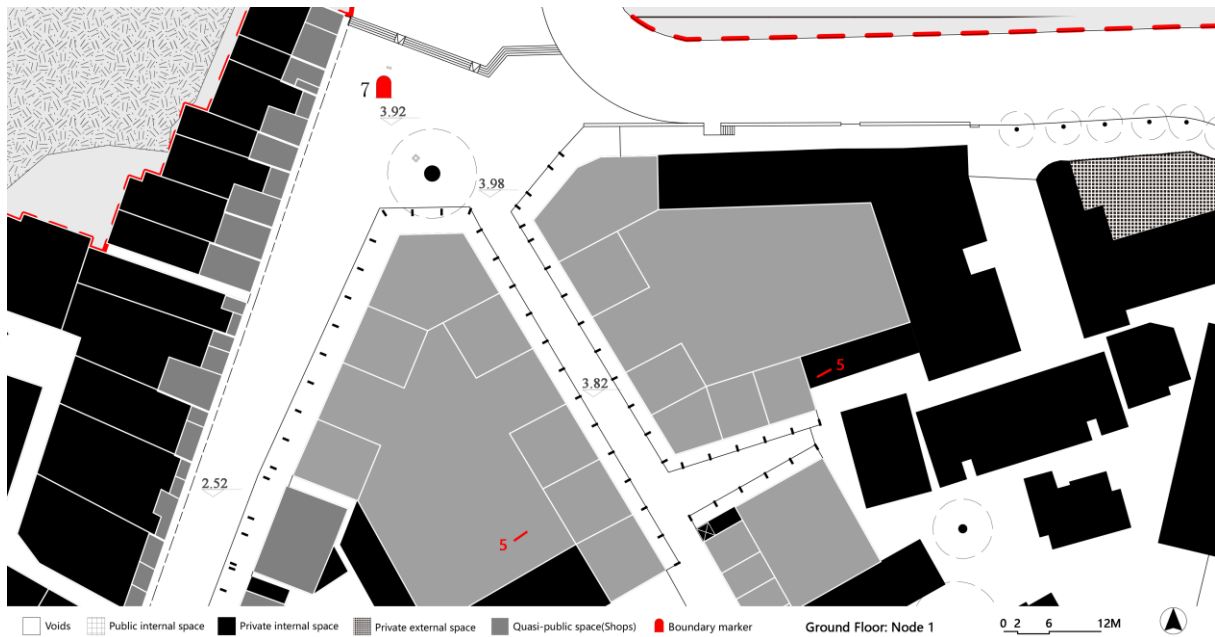


Figure 4-30 Ground Floor of Quan Gang Hui Shopping Mall

(Source: Drawn by the Author)

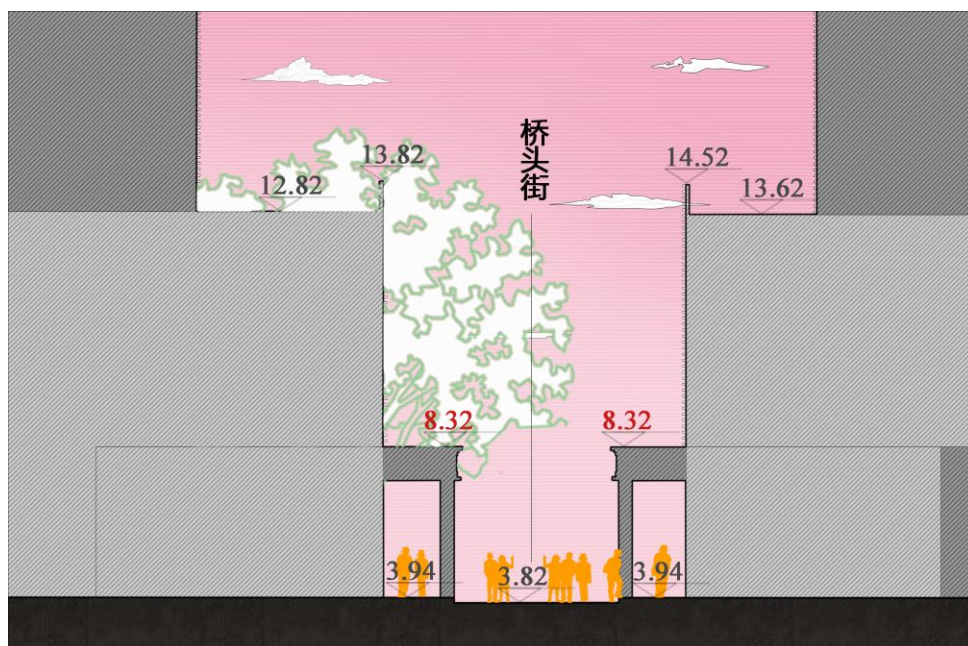


Figure 4-31 Section 6-6

(Source: Drawn by the Author)

4.5 Summary

The ground optimization design of Chung Ying Street in Sha Tau Kok primarily focuses on two aspects: optimizing the figure-ground relationship and enhancing spatial interfaces. The detailed conceptual design is presented through specific node designs. Addressing issues related to functionality, visual quality, and experiential aspects, the ground space is improved to enhance the overall urban experience of Chung Ying Street.

The study and design of the ground space in Chung Ying Street emphasize human-centric spatial experiences, enriching commercial activities throughout different time periods, strengthening functional spaces, and preserving historical elements on the ground. The goal is to enhance the tourist experience and consumption potential, harmonize the preservation of historical sites, and facilitate the relaxation of border area restrictions, aligning with multifaceted future development objectives.

Conclusion

Through an in-depth analysis of the ground elements, figure-ground relationships, and spatial interfaces of Chung Ying Street, this study has summarized several issues and reflections, offering valuable insights and directions to further enhance the guidance for the improvement of urban ground in Chung Ying Street.

First and foremost, this study explicitly outlines three primary problem areas concerning the Urban Ground of Chung Ying Street: functionality, visual quality, and visitor experience. In terms of functionality, there are issues with the ground elevation design not considering accessibility needs, a prevalence of unauthorized structures occupying public space, relative scarcity of infrastructure and support functions, and a lack of indoor public ground or leisure areas. Visual quality problems manifest as a chaotic blend of architectural styles, with newly constructed shopping centers that do not harmonize with the surrounding buildings, rough spatial interfaces, and a lack of uniformity. Concerning visitor experience, there is a deficiency in rest areas and high-quality landscaping, affecting the comfort of visitors.

Secondly, an examination of the figure-ground relationships of ground floor in Chung Ying Street has revealed key issues. The fragmented state of the Veranda interfaces, the "disruption" of commercial spaces, interruptions in pedestrian continuity, and disarray in functional organization all restrict the coherence and functionality of urban ground in Chung Ying Street.

Lastly, in regard to spatial interfaces, this study highlights issues such as the lack of coordination between coarse-grained and fine-grained buildings, non-uniform scales and styles between new and pre-existing structures, and the negative impact of Illegal expansion of buildings on spatial continuity, consistency, wayfinding, and readability. Facing these issues, it's evident that urban ground of Chung Ying Street is influenced directly, impacting its overall quality and sustainability.

Collectively, this study recognizes the potential for transformation in the ground elements of Chung Ying Street. By optimizing functionality, enhancing visual quality, and improving visitor experience, Chung Ying Street can become a more livable, enjoyable, and shopping-friendly urban environment. Concerning figure-ground relationships and spatial interfaces, addressing issues related to structural coherence and functionality will create a more appealing urban space. Negative spatial interfaces and accessible design must receive special attention to increase the accessibility and user-friendliness of Chung Ying Street.

In conclusion, this study's in-depth analysis and issue identification of urban ground in Chung Ying Street, combined with the proposed design strategies and ideas, provide valuable reference points for future enhancements. Chung Ying Street can not only benefit from its own development but can also serve as an inspiration for the urban ground designs of other cities and historical areas. This research underscores the significance of the urban ground as a core element of urban design and its optimization, which will have a profound impact on the human-centric sustainability of the city. It is hoped that this study will provide valuable guidance for the future development of Chung Ying Street, ultimately contributing to the creation of a better urban environment.





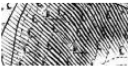


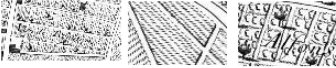
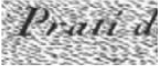

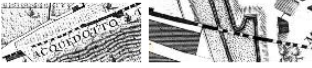


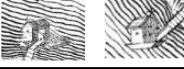
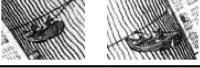

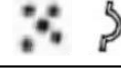

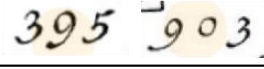



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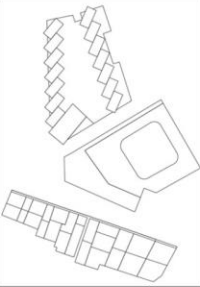
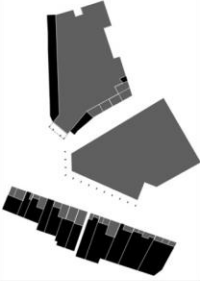

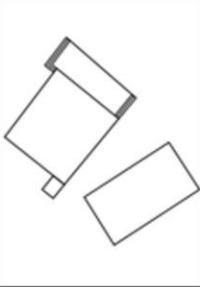
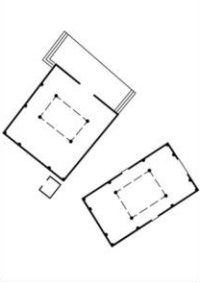




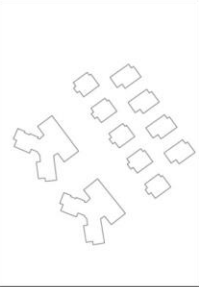


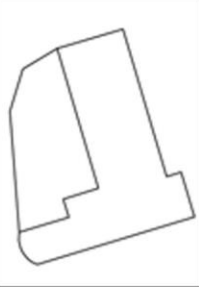


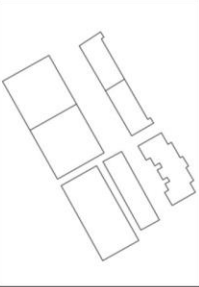
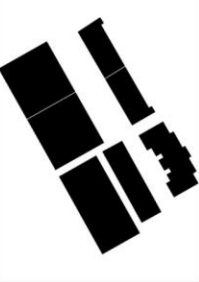

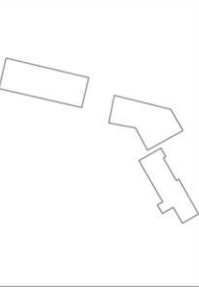
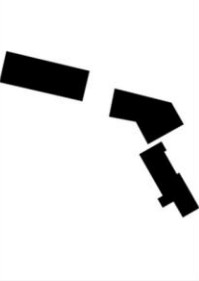

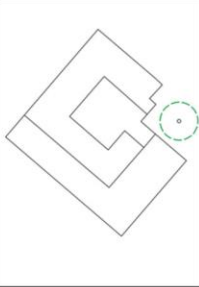
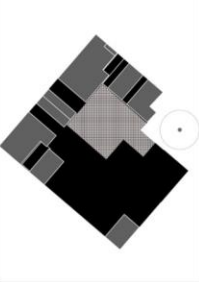
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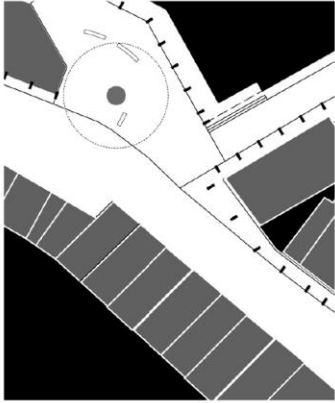

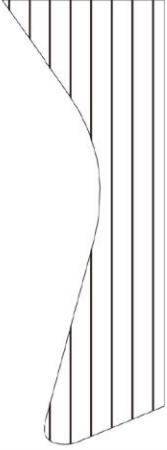


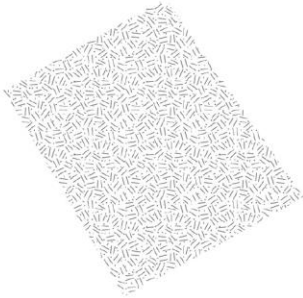
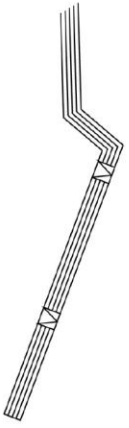
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Appendix 1 Field Survey Drawings

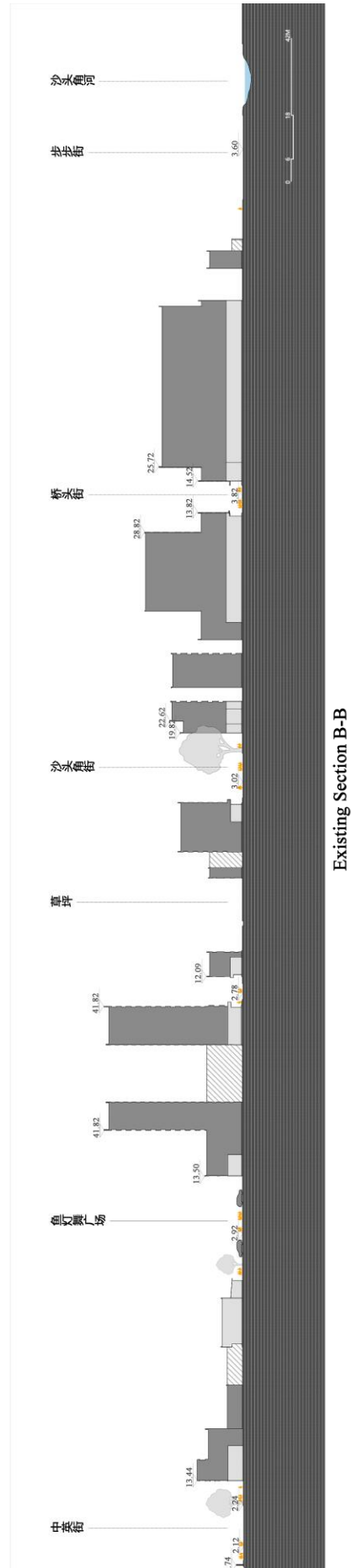
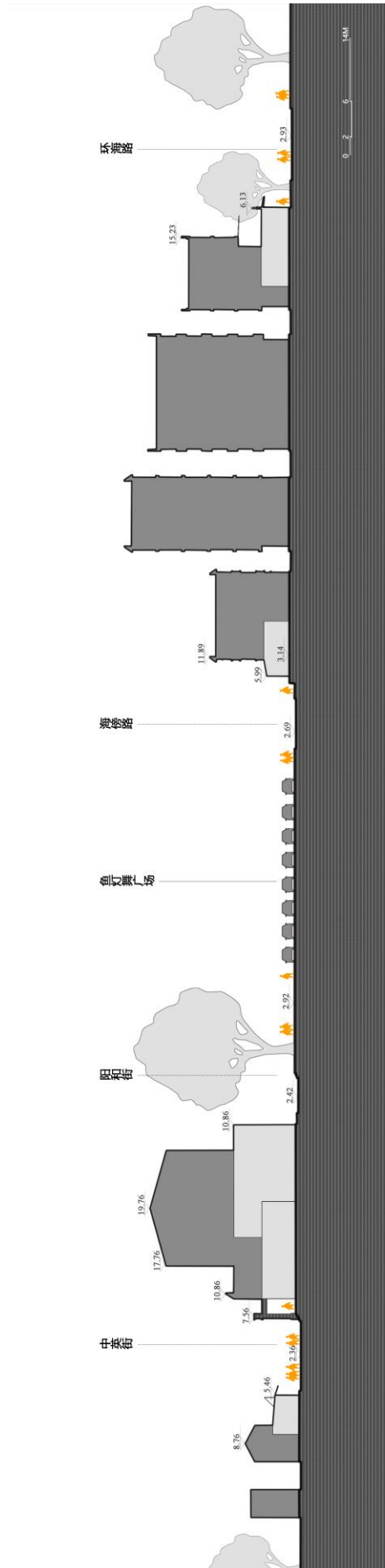
Category	Subcategory		Example
Urban built-up area	Public space	Street and square	
		Public parts of buildings	
	Private space		
	Green space		
Nonurban portions of the city	Hill		
	Quarry		
	River		
	Plantation		
	Grassland		
	Woods		
Municipal infrastructure and street furniture	Aqueduct		
	Bridge		
	Wharf		
	Water mill		
	River craft		
	Fountain		
	Drain		
Illustrative cartographic symbols and words	Textual label		
	Number		
	Line		
	Graphic symbol		
	Landscape painting		

Type	Roof plan	Mapping public and private space	Type	Roof plan	Mapping public and private space
Type1: commercial shops					
			Type5: public building		
					
Type2: arcade building					
			Type6: gated community		
					
Type3: school					
			Type7: open residential community		
					
Type4: office building					
			Type8: commercial and residential mixed building		
					


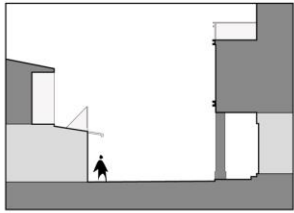
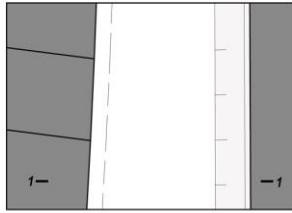

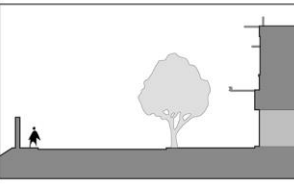
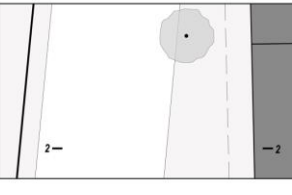

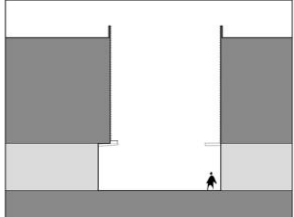
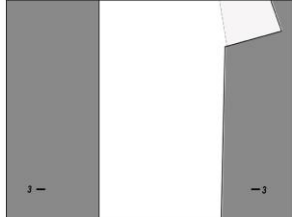

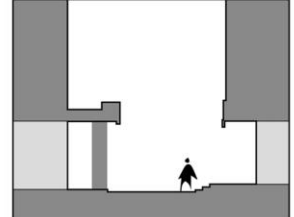


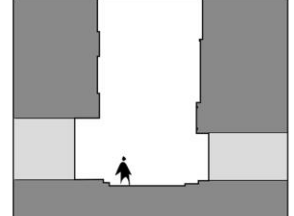
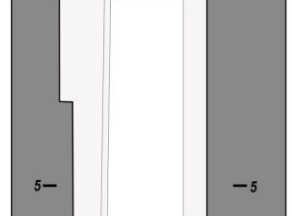

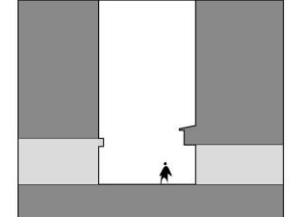
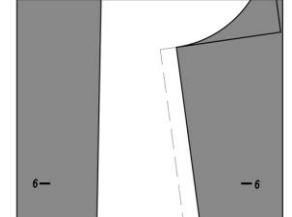
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Type2: green		Type4: height difference	
			




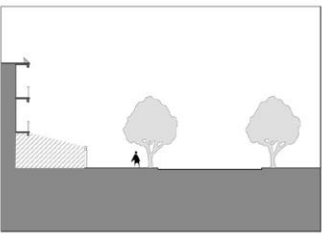
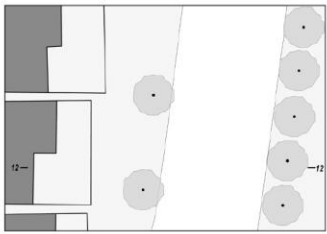


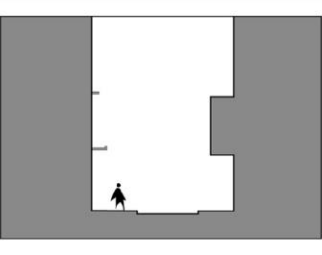

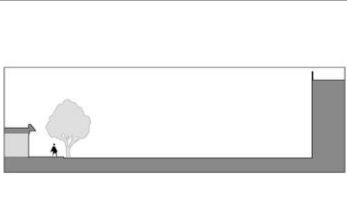

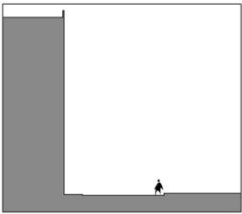






Veranda Commercial Spatial Interfaces		
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section2-2		
		
section3-3		
		
section4-4		
		
section5-5		
		
section6-6		
		

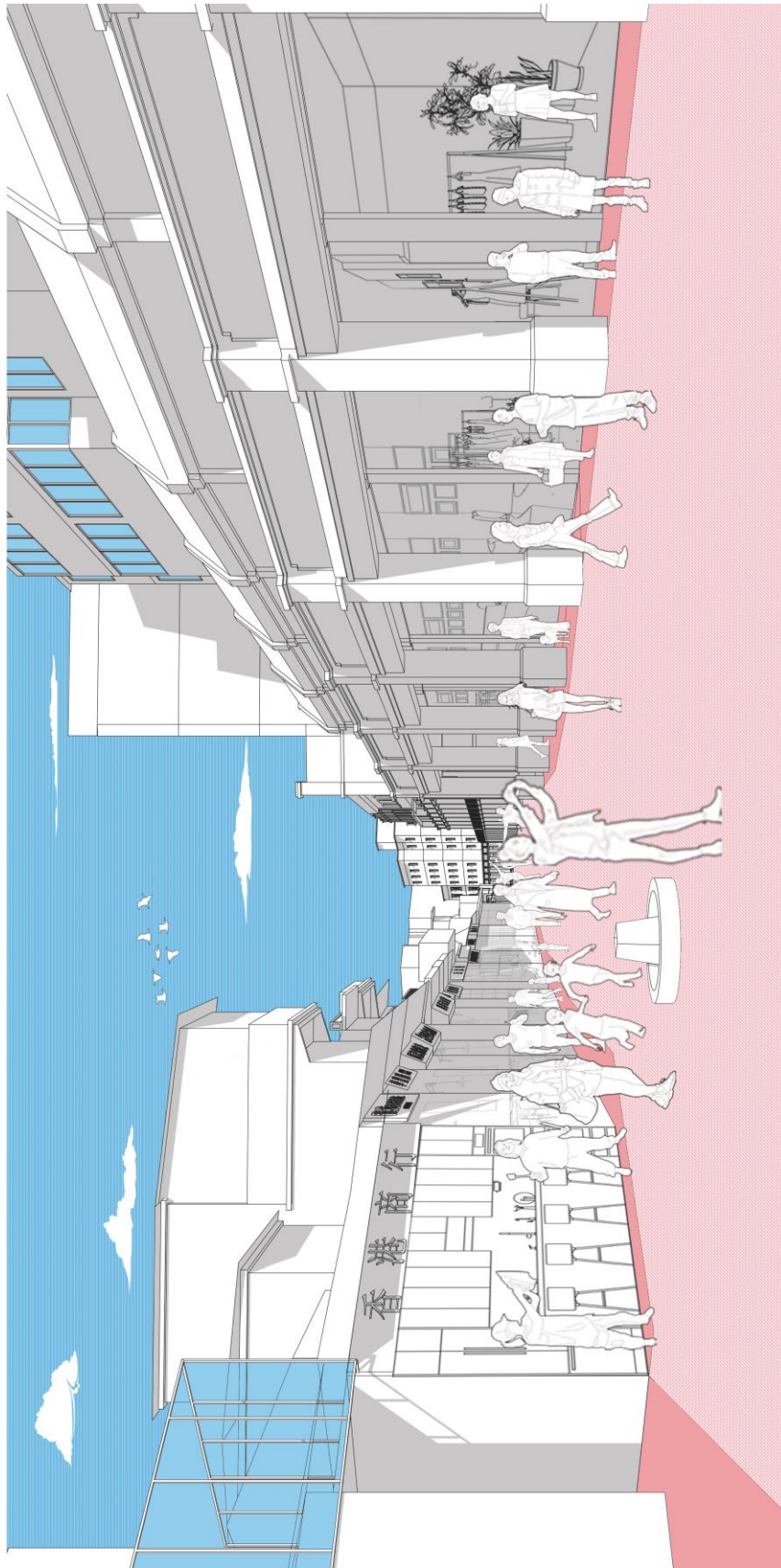
Lively Commercial Spatial Interfaces		
Photograph	Section	Plan
section7-7		
		
section8-8		
		
section9-9		
		
section10-10		
		
section11-11		
		

Photograph	Section	Plan
Active Residential Spatial Interfaces		
section12-12		
		
section13-13		
		
Passive Residential Spatial Interfaces		
section14-14		
		
Public Open Landscape Spatial Interfaces		
section15-15		
		
section16-16		
		

Appendix 2 Design Practice Drawings



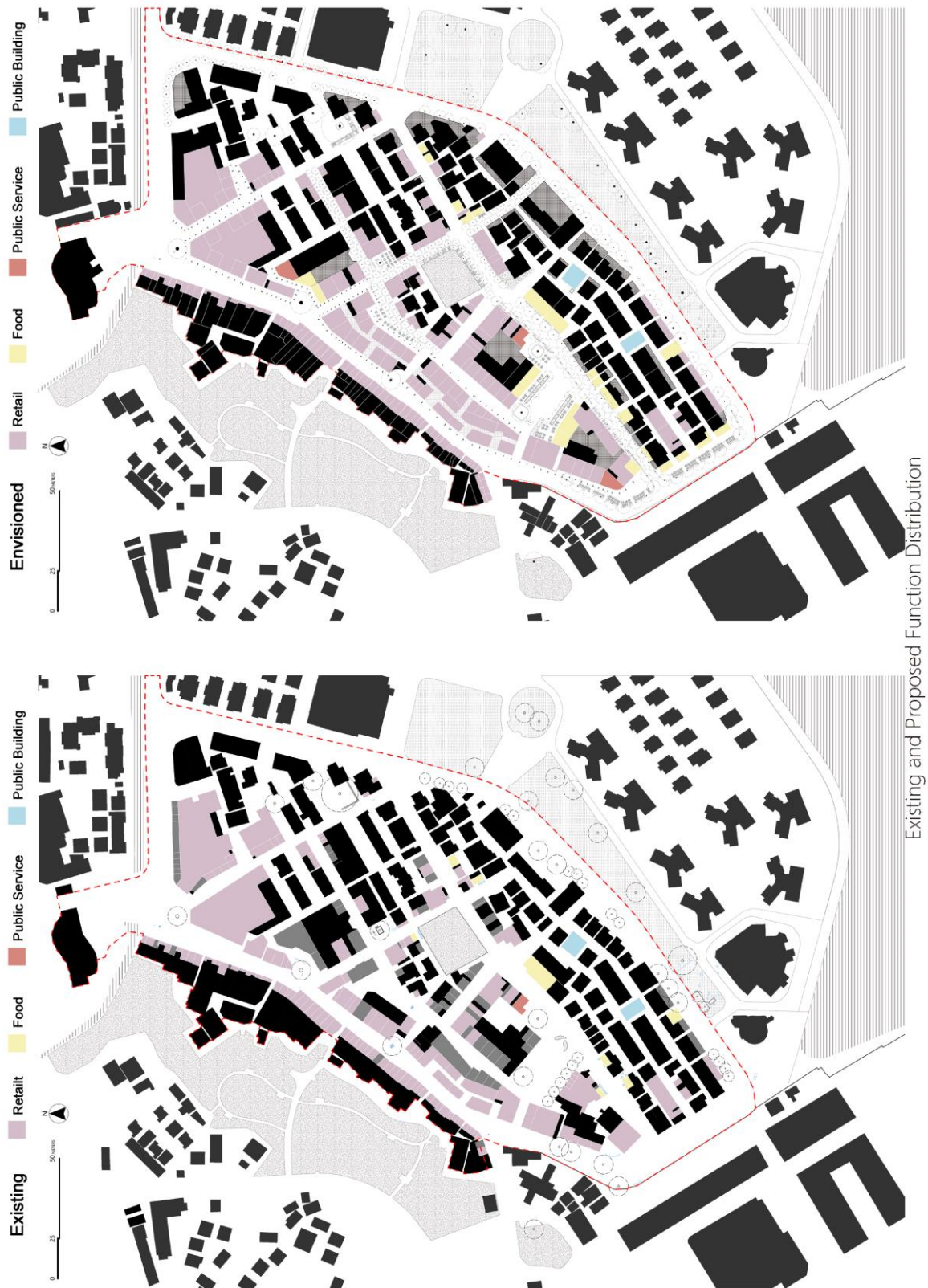




Human-scale Street Renderings



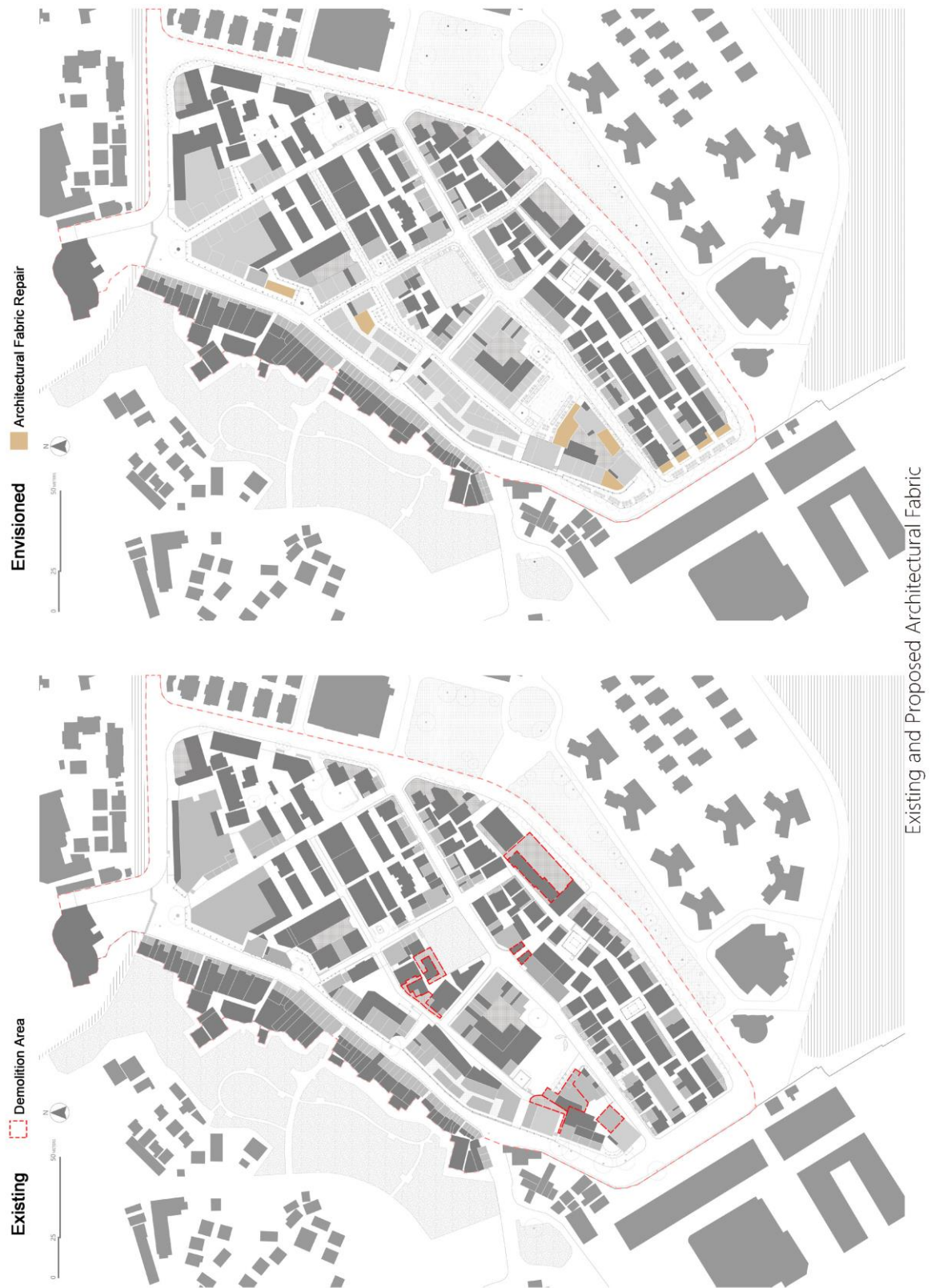


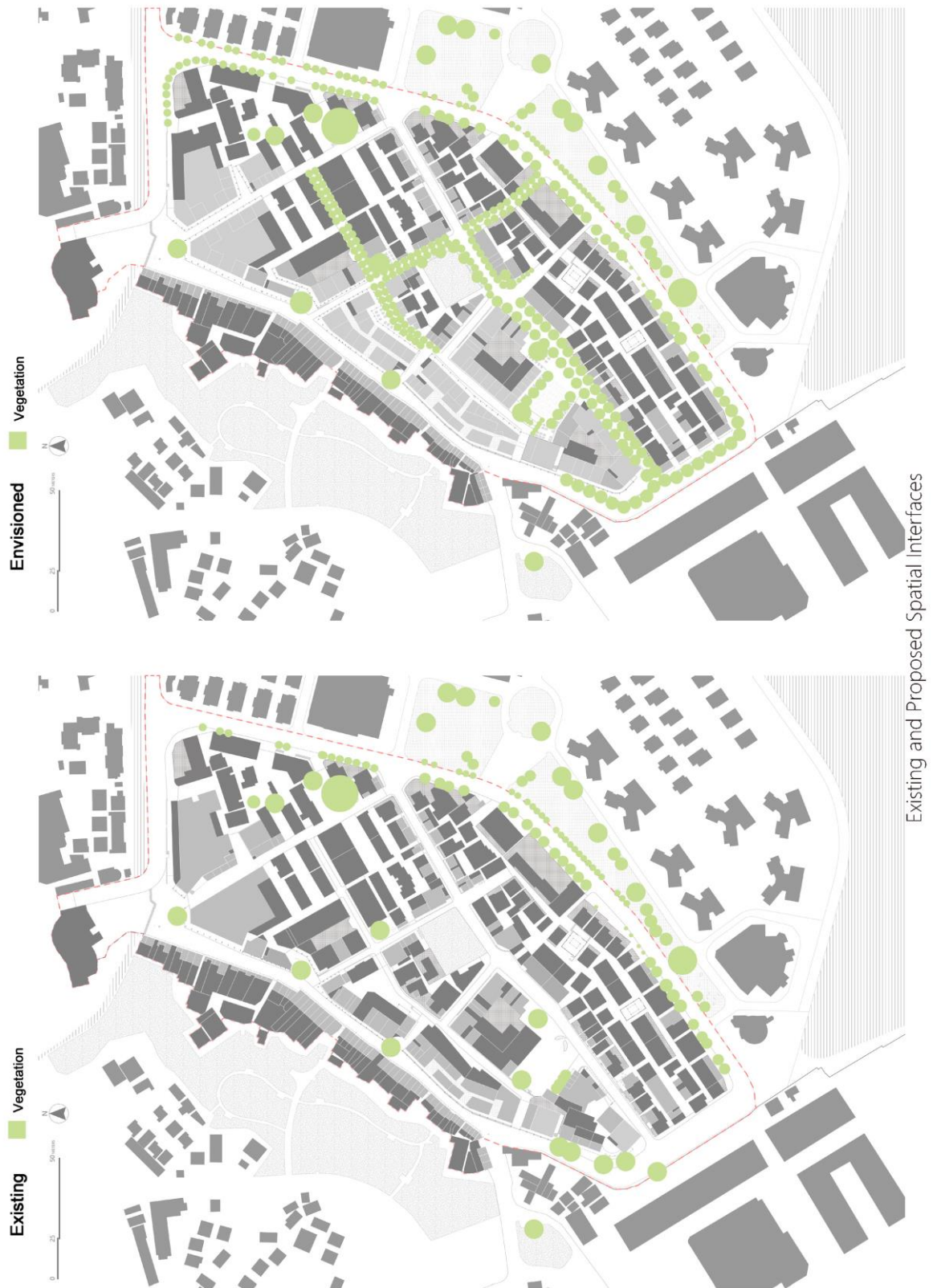


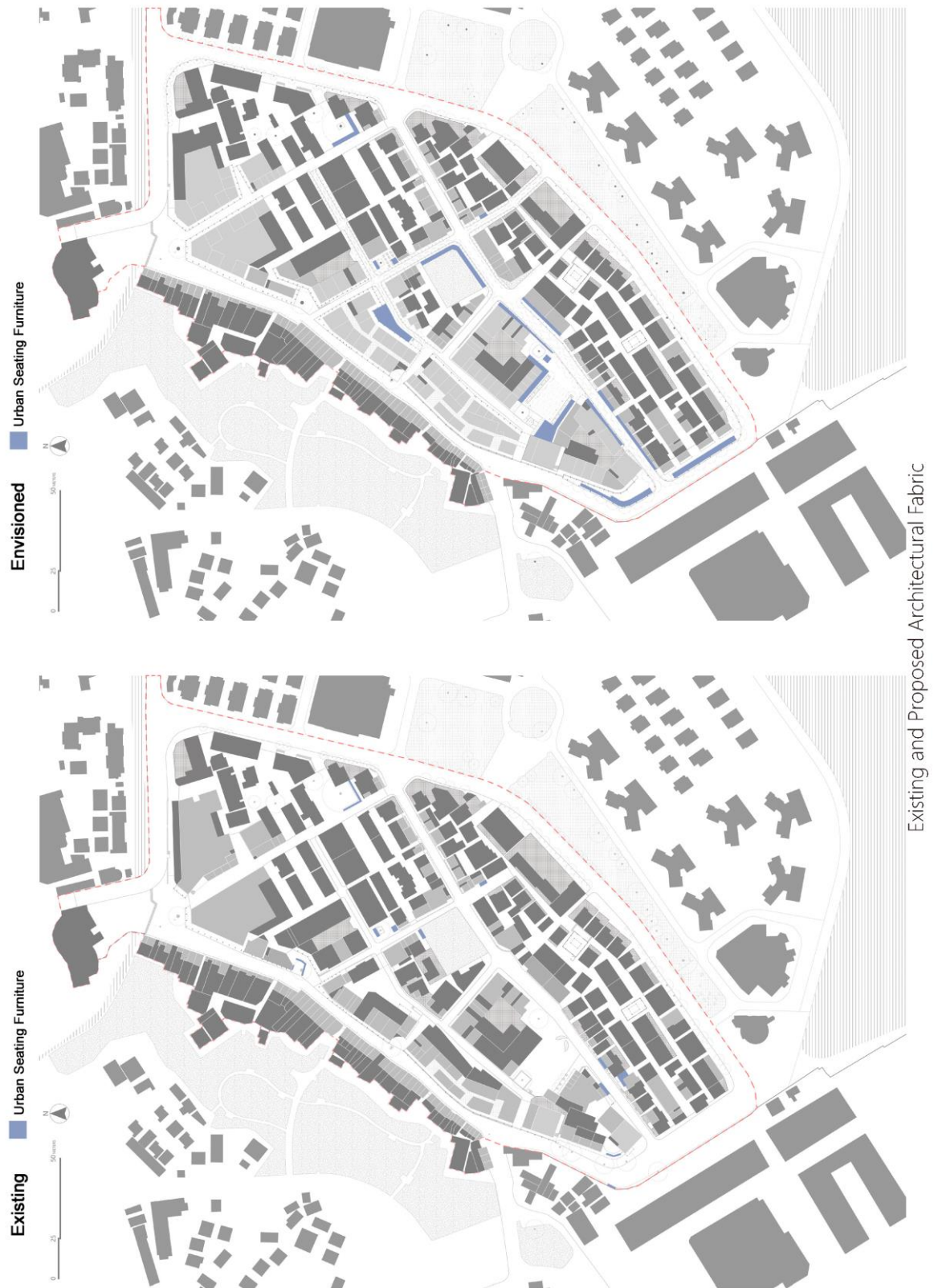
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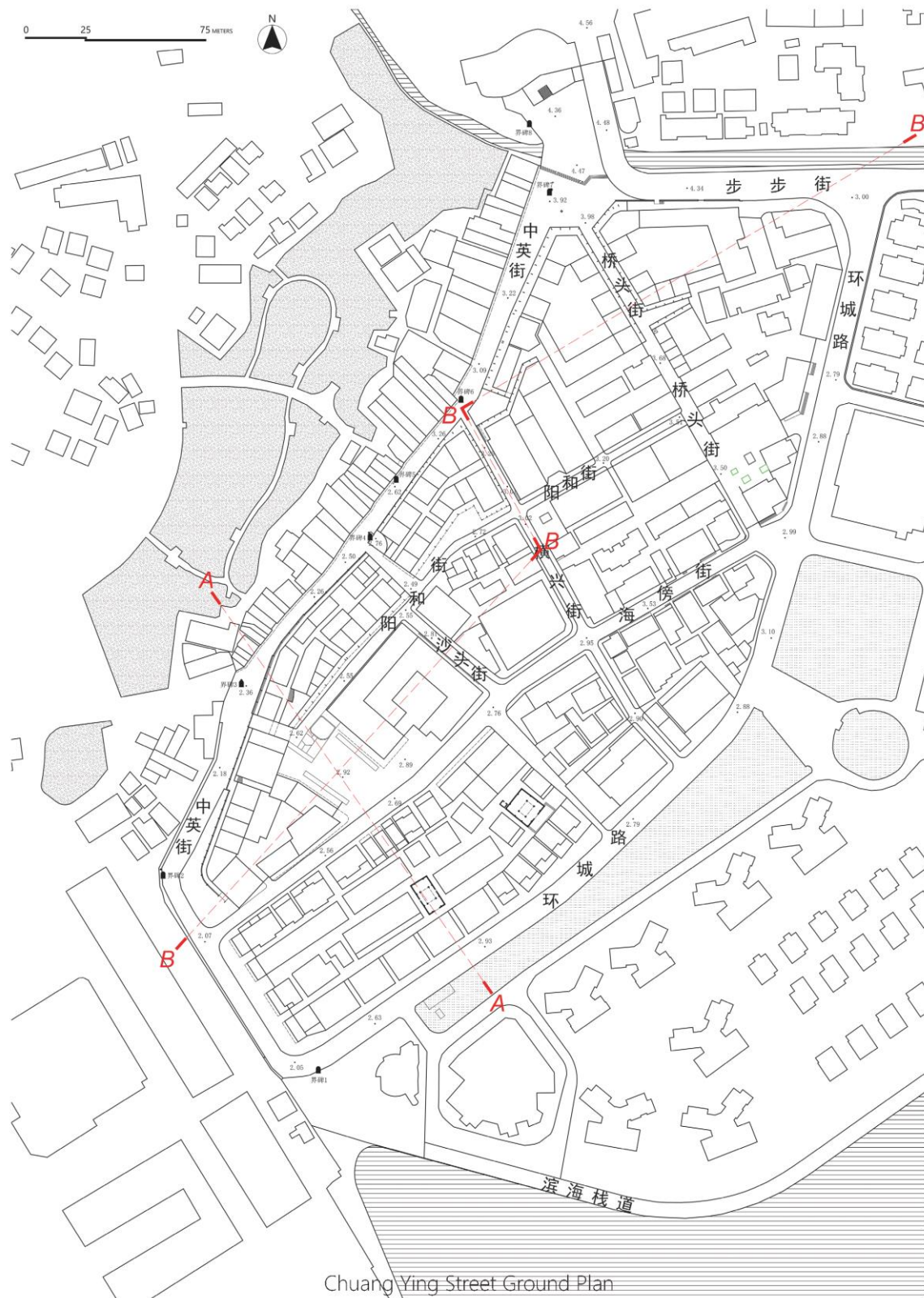


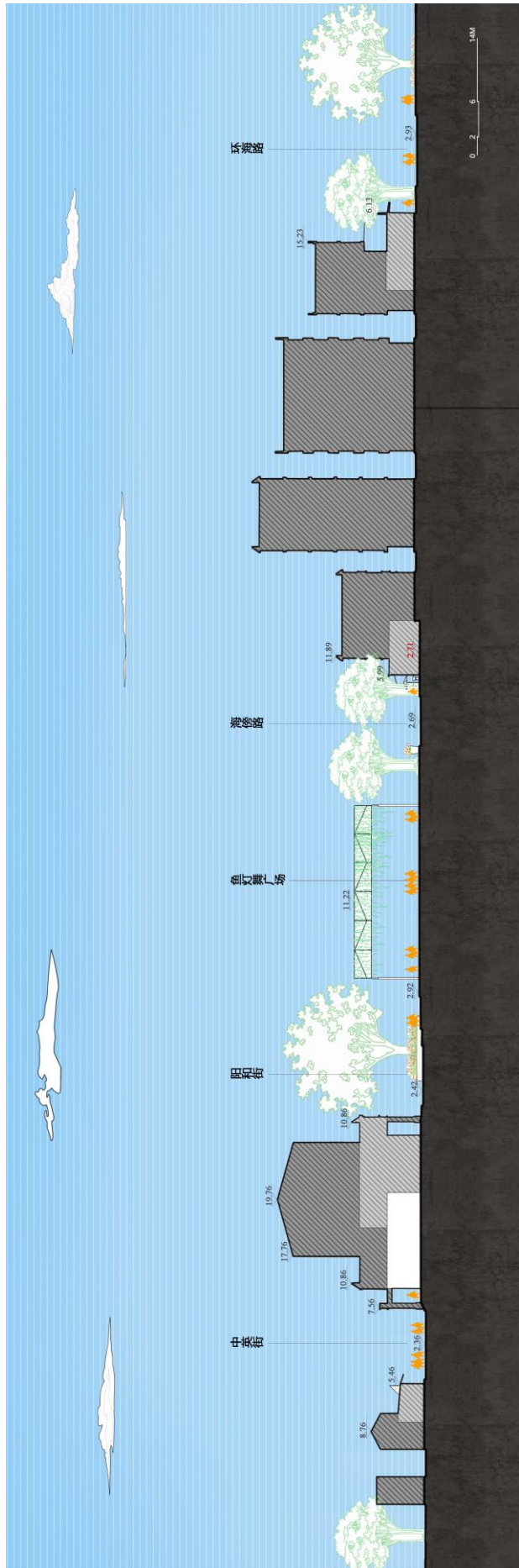
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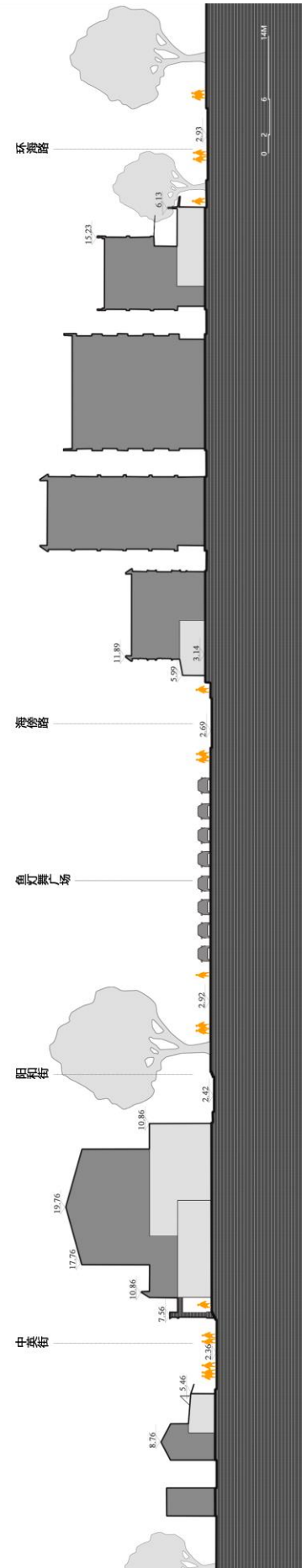




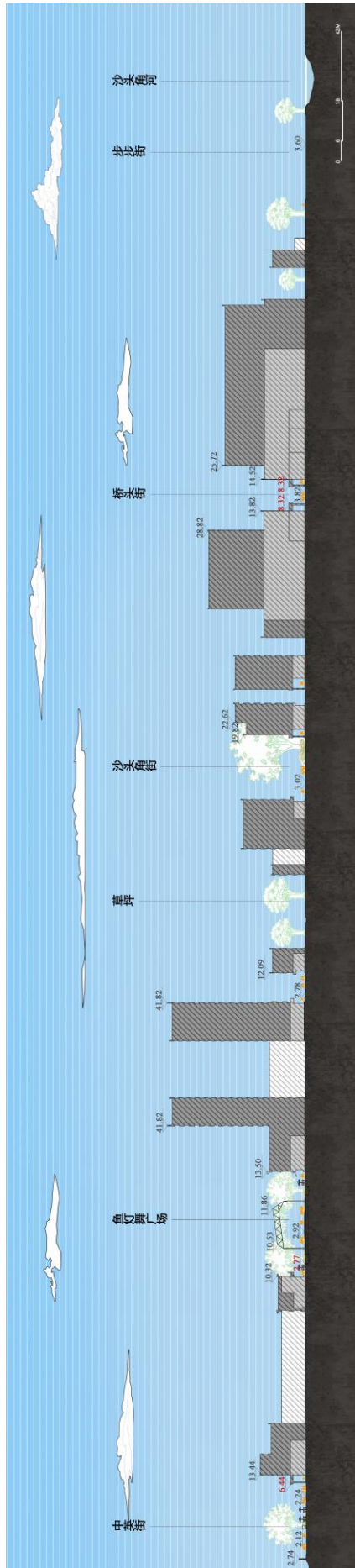




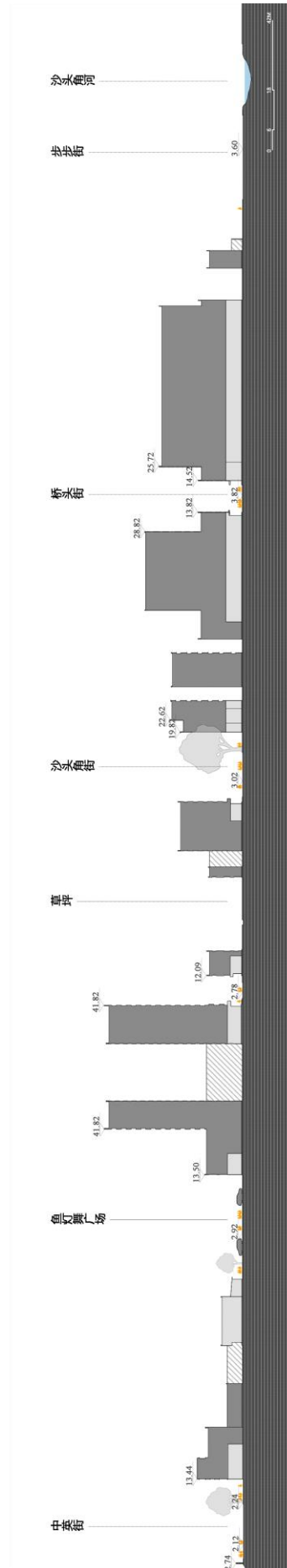
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Existing Section A-A

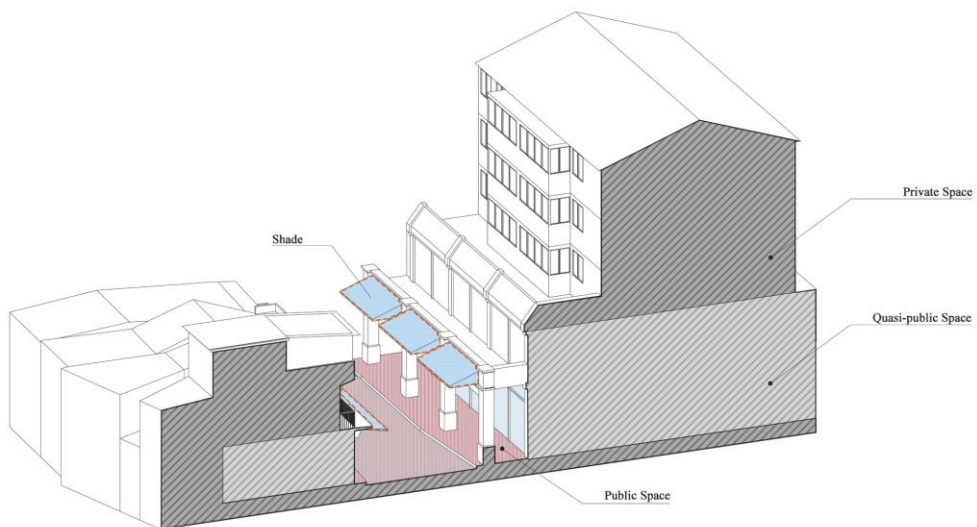


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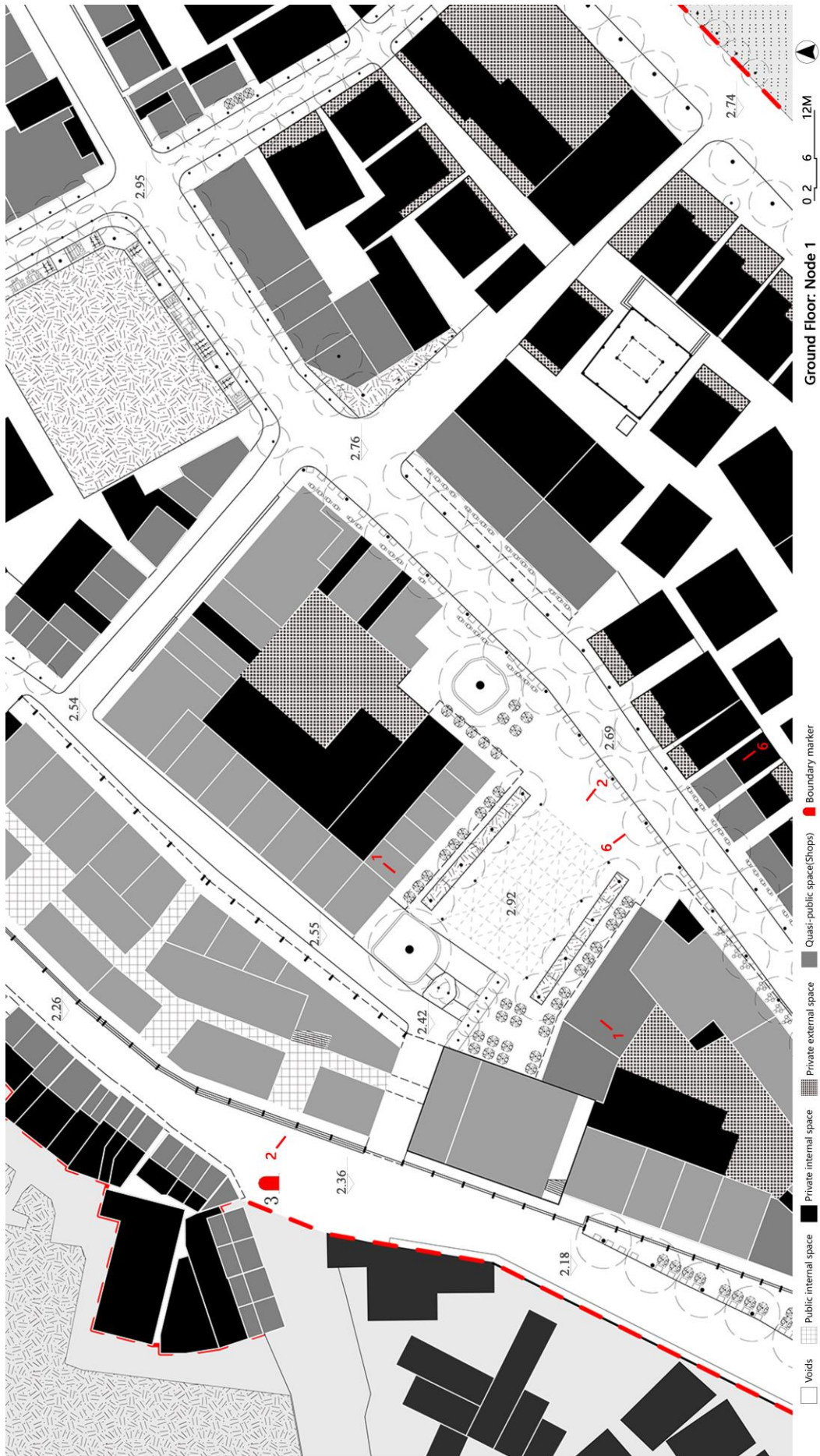


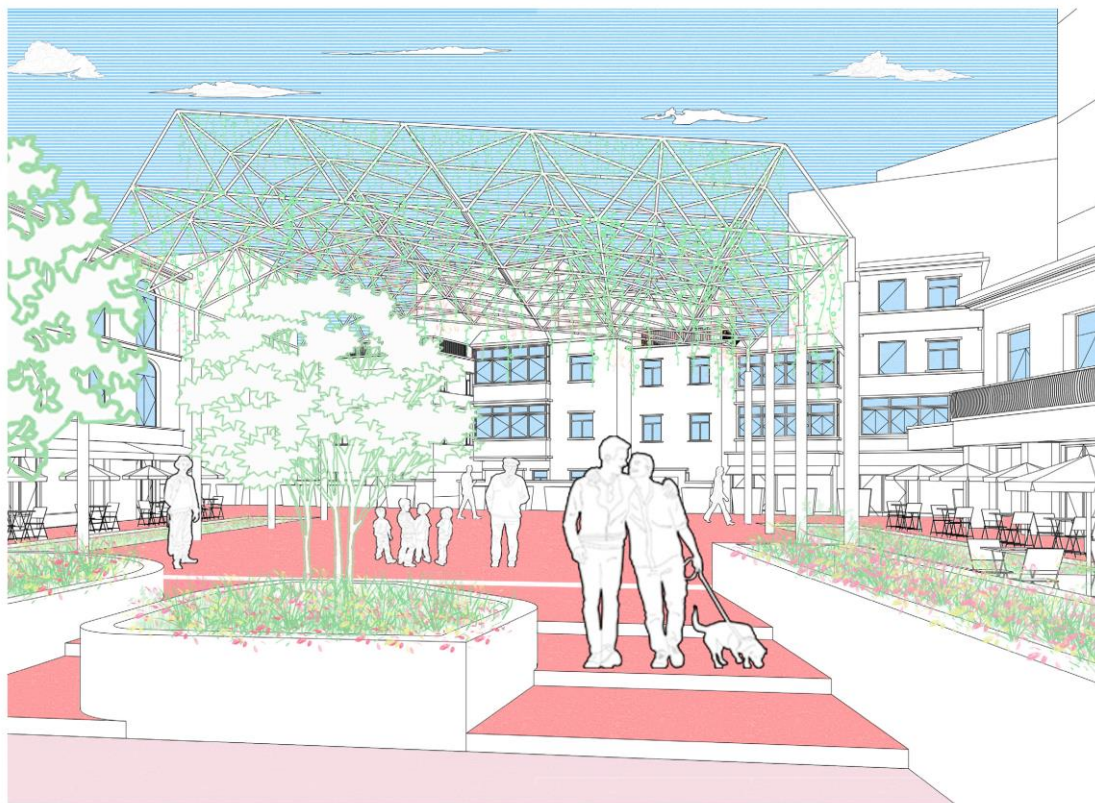
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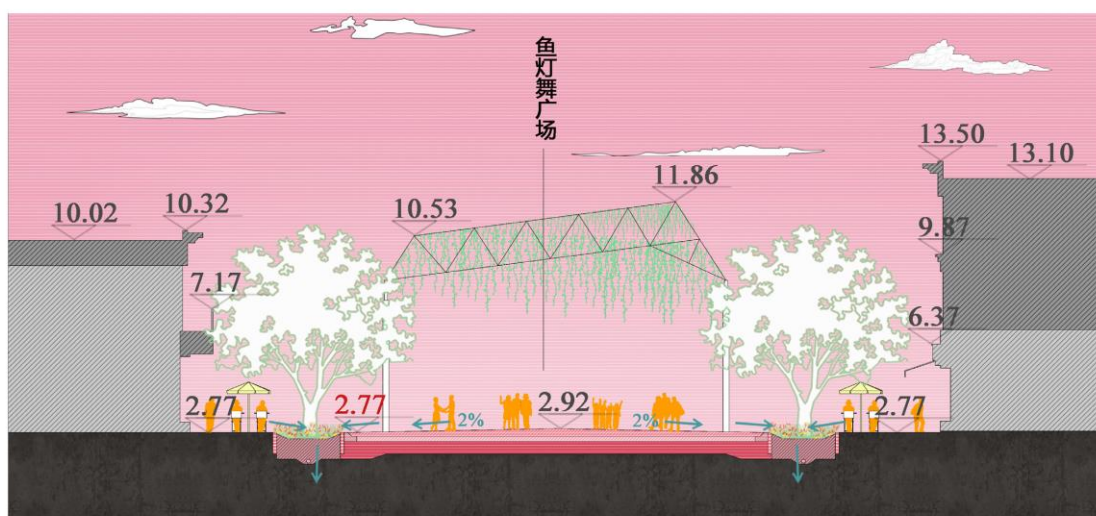




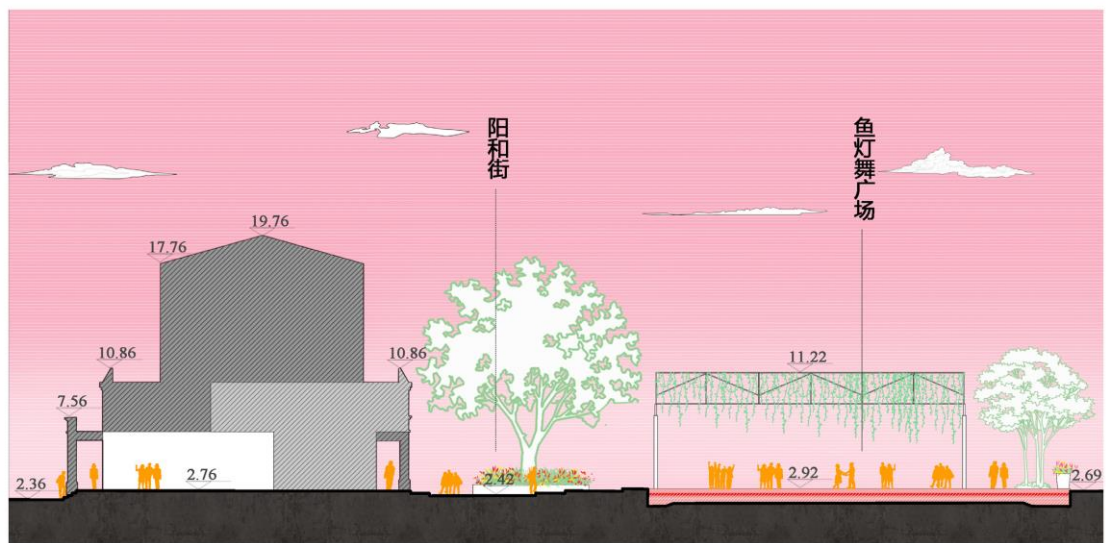




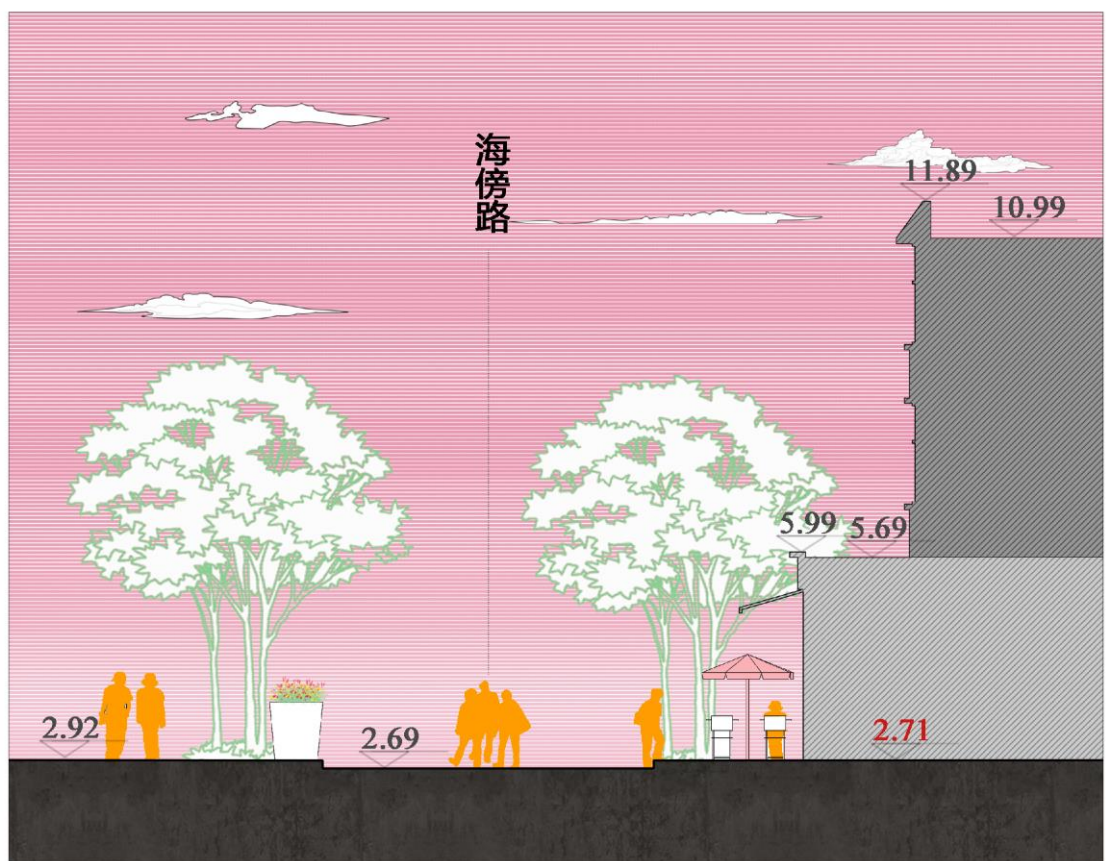
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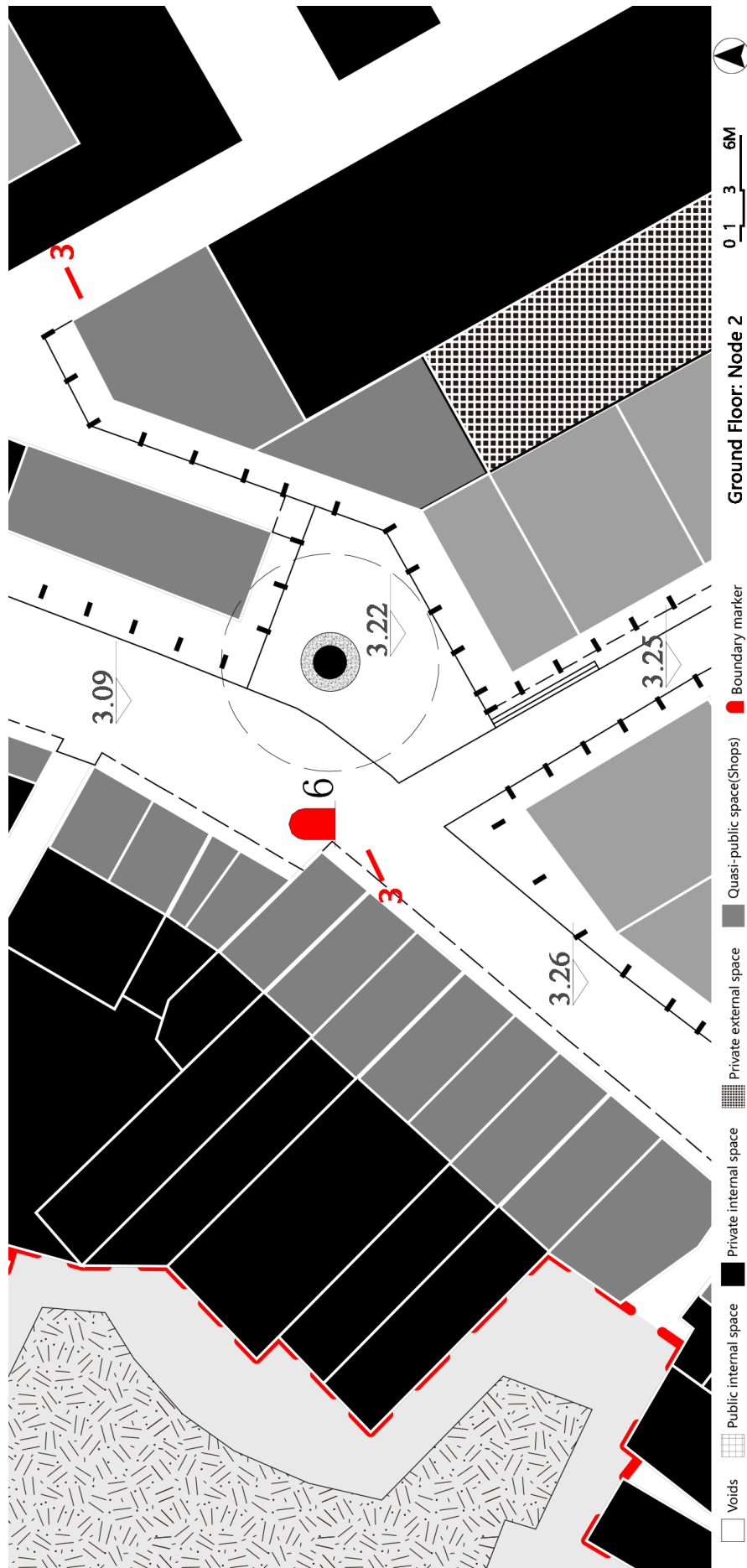
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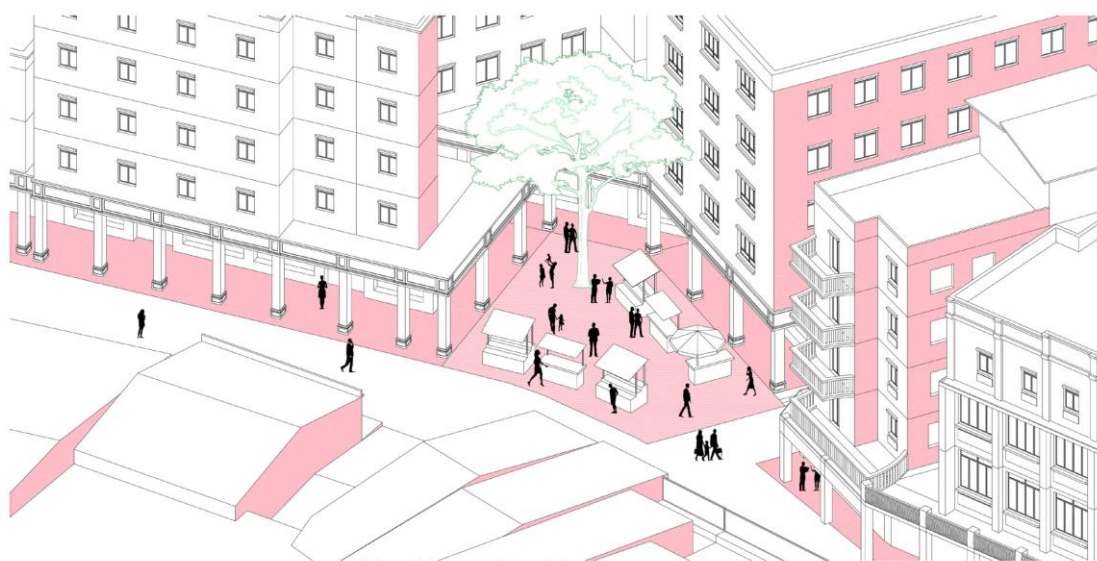


Section 2-2

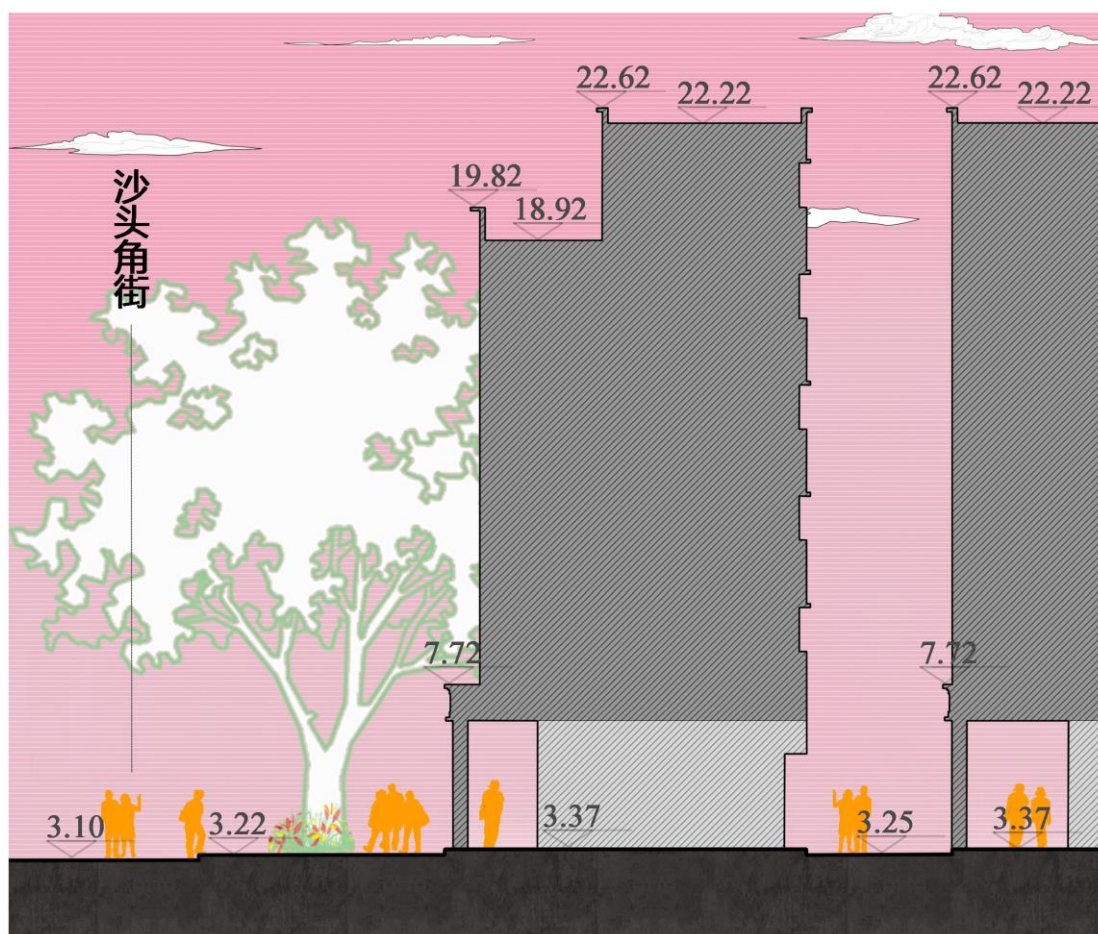


Section 6-6

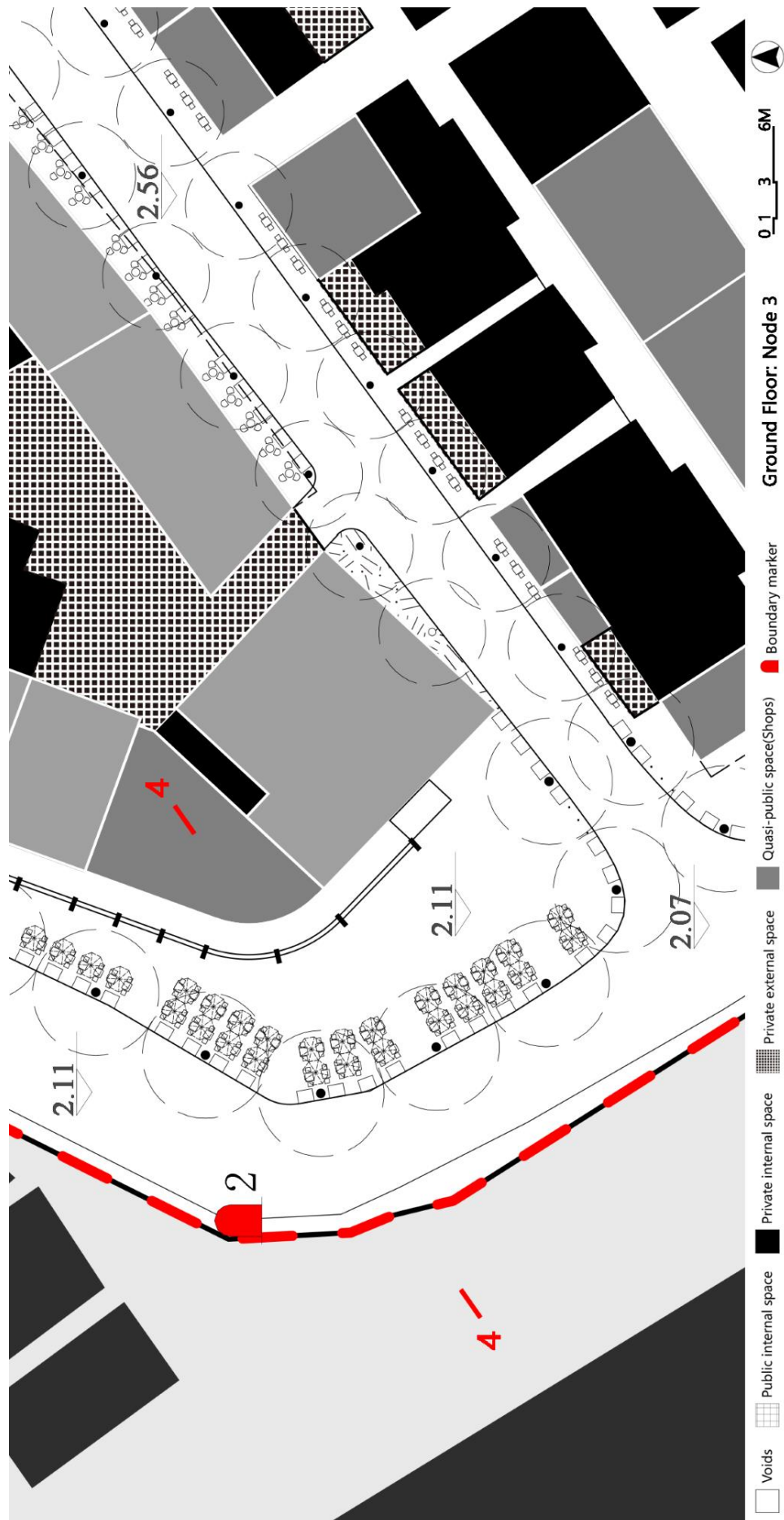


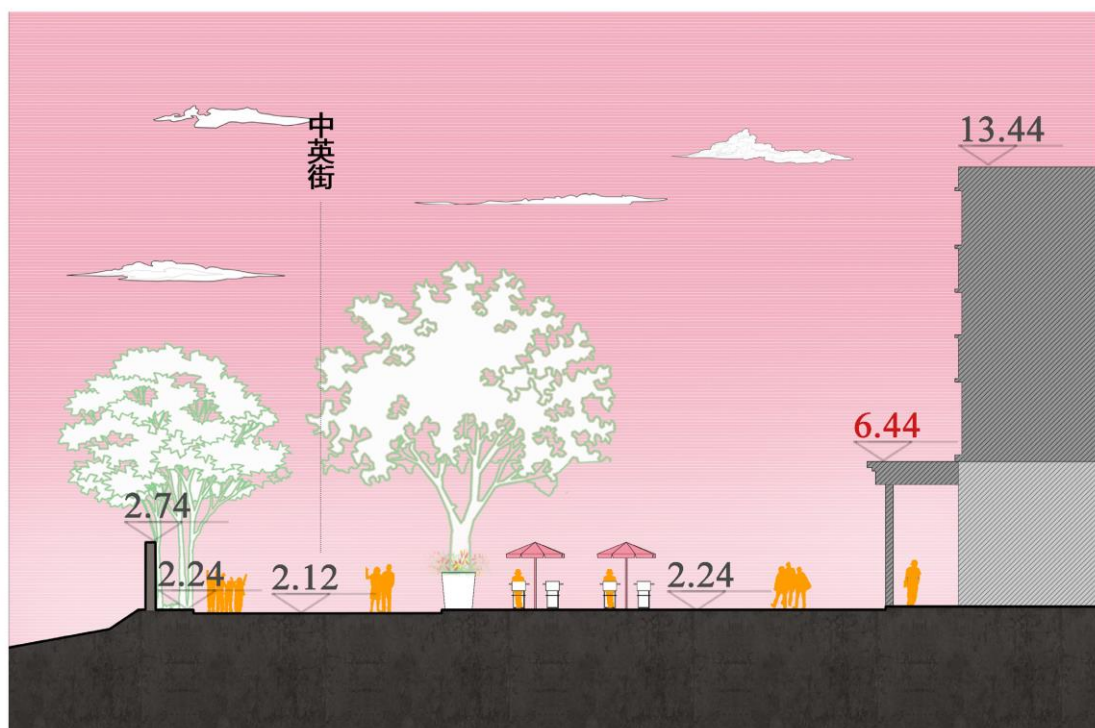
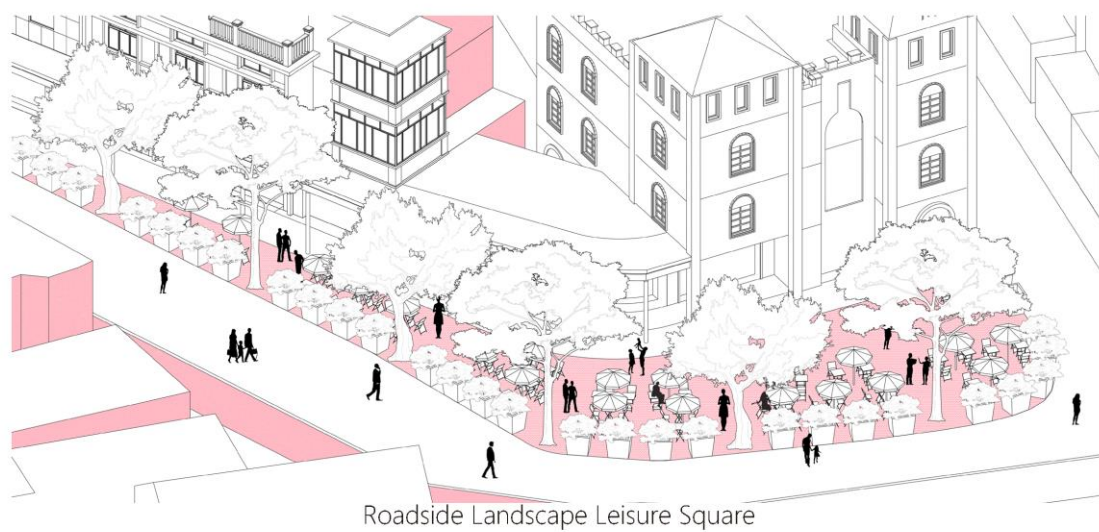


No. 6 Boundary Monument Square

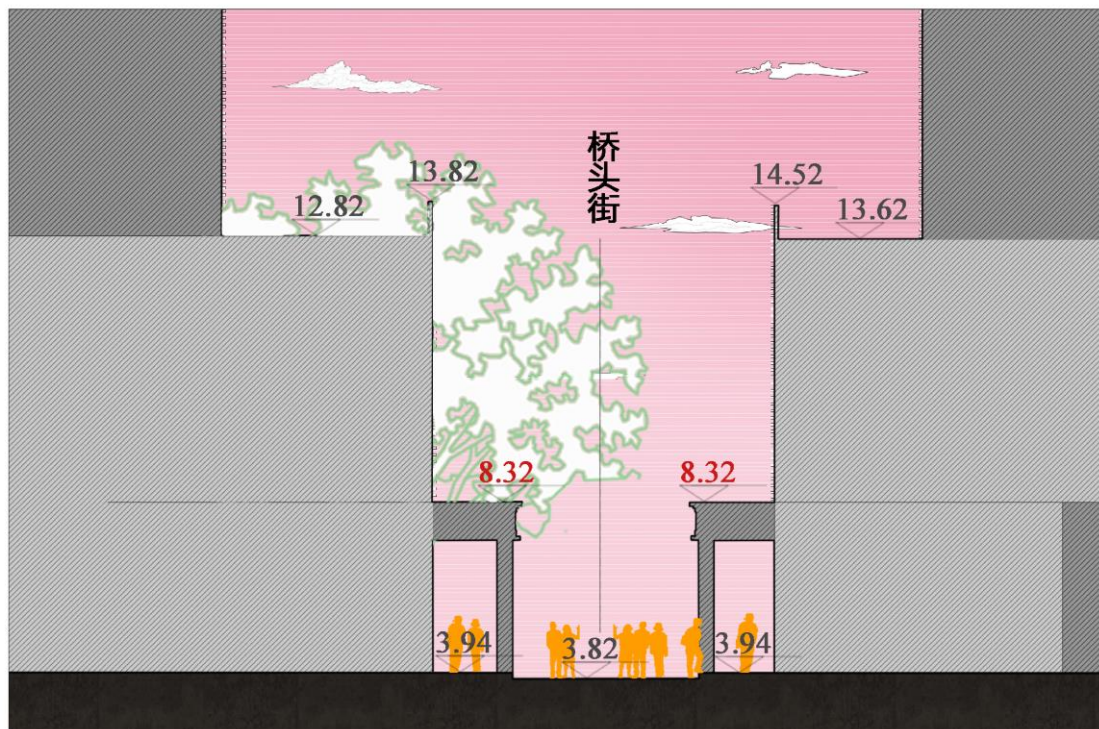


Section 3-3





Section 4-4



Appendix 3 Questionnaire Design

1. Your identity is:
 - (a) Tourist
 - (b) Resident of Chung Ying Street
 - (c) Merchant
 - (d) Staff
 - (e) Other
2. Your age group is:
 - (a) 18 years and below (b) 19-34 years (c) 35-55 years (d) 55 years and above
3. Does the environment of visiting and shopping in Chung Ying Street give you a pleasant experience?
 - (a) Yes, very pleasant (b) Yes, quite pleasant
 - (c) So-so, no special feeling (d) Unpleasant, somewhat dissatisfied
4. Do you feel that the scenery and street furniture in Chung Ying Street meet your resting and leisure needs?
 - (a) Completely satisfied (b) Quite satisfied (c) So-so (d) Not very satisfied
5. During your visit and shopping in Middle Street, do you feel that there is sufficient comfortable space with shade and shelter?
 - (a) Yes, there is plenty of comfortable space. (b) It's alright; many areas are comfortable.
 - (c) Not quite, there is insufficient comfortable space. (d) There's hardly any comfortable space.
6. Can the facilities provided by Central and British Street, such as luggage storage and restrooms, meet your needs?
 - (a) Completely satisfied
 - (b) Mostly satisfied
 - (c) Average, needs improvement
 - (d) Not very satisfied
7. Would you choose to dine in Central and British Street?
 - (a)yes (b)no
8. If you dine here, does the food and dining environment in Central and British Street meet your expectations?
 - (a) Completely satisfied
 - (b) Somewhat satisfied

- (c) Average
 - (d) Not very satisfied
9. Did you experience interesting community interactions and engagement during your visit and shopping in Central and British Street?
- (a) Yes, there were many community interactions and engagement
 - (b) There were some community interactions and engagement
 - (c) There were few community interactions and engagement
 - (d) There were no community interactions and engagement
10. May I ask how long you initially expected to stay in Central and British Street before your visit, and how long did you actually stay? What prompted you to change your decision?
11. During your visit to Central and British Street, what activities did you engage in, such as sightseeing, shopping, leisure, dining, etc., and how was your experience? Do you have any suggestions to offer?
12. Did you visit or shop in other places within the Central and British Street community, apart from this specific street? How was your experience?

Appendix 4 Interview Transcript

- (1) Group 1 Interviewees (a young mother with an 8-year-old boy, on the square of Central and British Street after entering from Shenzhen)

Author: May I ask if both you and your child are visiting Chung Ying Street for the first time?

Mother: Yes, we've been living in Shenzhen for several years, but we've never been to Chung Ying Street before. I took the opportunity to bring my child here this summer.

Author: Little one, what's your purpose for coming here? What are you looking forward to the most?

Child: I'm most looking forward to buying snacks.

Mother: Snacks can be bought anywhere, and nowadays there are many options for shopping due to the abundance of goods. I brought you here in the hope that you can experience the history of Chung Ying Street, understand how our country was bullied by other countries when it was weaker in the past, and not forget our national humiliation. We should strive to become stronger.

Author: That's right, Chung Ying Street is not just a simple shopping street; it's also a vibrant scene for patriotic education. May I ask how long you plan to stay in Chung Ying Street?

Mother: We plan to stay from 9 in the morning until around 4 in the afternoon, a whole day to explore this place.

Author: Wishing you a pleasant visit, and I hope we can meet again later for an interview about your experiences after your visit.

- (2) Second Group Interviewees (Two boys, a high school student, and his younger cousin, a sixth-grader, at the intersection of Huanhai Road and Qiaotou Street)

Author: Hello, may I ask if you are exploring on your own without any parents?

High School Student: Yes, both of us are from Fujian, and we came to Shenzhen on our own. Our main destination is Huaqiangbei, and we decided to visit Chung Ying Street as well.

Author: How did you learn about Chung Ying Street and decide to come here?

Elementary School Student: We found it in an online travel guide. We searched for it on Baidu.

Author: How long have you been here, and what's your experience visiting and

exploring this place?

High School Student: We plan to stay here for 1 to 2 hours. Currently, we feel it's quite average, with nothing particularly special. When we first entered, we noticed the archway at Qiaotou Street, which looked distinctive, so we walked over here.

Author: What is your main objective in coming here? Among shopping, sightseeing, leisure, and dining, which activities are more appealing to you?

Elementary School Student: We're just here to take a look around, not planning to eat here.

Author: Alright, thank you, and I wish you an enjoyable sightseeing experience.

(3) Third Group Interviewee (A young staff member, a traffic marshal, on Huanhai Road)

Author: Hello, may I ask how long you've been working at Chung Ying Street?

Staff Member: I've only been here for a short while. I'm not a local, so I'm not very familiar with this place yet.

Author: How do you find the atmosphere of historical displays and cultural exchange in Chung Ying Street?

Staff Member: So far, there hasn't been much of that. There are only bulletin boards and cultural walls.

Author: Based on your observations, how long do most visitors spend exploring Chung Ying Street?

Staff Member: It's about 2 hours on average. They come, do some shopping, and then leave.

Author: What do you think of the environment for sightseeing and shopping here, and how is the overall experience? Would you recommend this place to your friends and family?

Staff Member: I probably wouldn't recommend it; the experience here is just average.

Author: Apart from the attractions on Chung Ying Street, like the boundary marker and cultural wall, do you think other places in the community are worth visiting?

Staff Member: There's that old pagoda along the coast; it's quite distinctive.

Author: Alright, thank you, and I wish you a pleasant life and work.

(4) Fourth Group Interviewee (A middle-aged tour guide with tourists at the Veranda of Chung Ying Street)

Author: Hello, may I ask how many times you've been here?

Tour Guide: I'm very familiar with this place. I come here every day because I bring tour groups for visits.

Author: How long do you usually let the tourists stay here?

Tour Guide: Usually a little over an hour is enough. They take photos and do some shopping.

Author: As a tourist attraction, what aspects of Chung Ying Street do you think need improvement?

Tour Guide: They should create more rest areas. Even though this place isn't large, with our tour groups of over 100 people at once, there's a need for some light food and drink stalls. Actually, with such a large number of tourists, the restaurants here can't accommodate all of us.

Author: Where do you mainly take tourists for sightseeing? Do you enter the community?

Tour Guide: No, we just walk around Chung Ying Street and the seaside promenade, stopping at places with historical significance.

Author: Alright, thank you very much. I wish you a successful work and a happy life.

- (5) Fifth Group Interviewee (A family of three, mom, dad, and a 7-year-old girl, on the seaside promenade)

Author: Hello, is this your first time coming to Chung Ying Street?

Mom: Yes, our home is in Dongguan, and it's the weekend and summer vacation, plus her dad works here, so we came over to have some fun.

Author: How long do you plan to spend here? Will you have lunch here at noon?

Mom: We'll stay for about 2 hours and then head back. I don't think we'll have lunch here.

Author: Does the little girl find this place fun? What's her favorite part?

Little Girl: Well, it's not very fun. The museum is better because it's cool, has air conditioning, and you can look at pictures.

Author: Apart from Chung Ying Street and the Chung Ying Street Museum, have you been to other places in this community?

Mom: Not yet. I don't think we'll go anywhere else. The kid keeps saying it's too hot and wants to go back.

Author: Thank you for your cooperation. I wish you all the best.

- (6) Sixth Group Interviewee (A retired lady from the nearby community and her friends,

on the seaside promenade)

Author: Do you often come to Chung Ying Street?

Lady: I used to come here often, but this is my first time after the pandemic.

Author: What activities do you usually do when you come here?

Lady: Usually, I come with my neighborhood sisters. We buy some daily necessities and shop together.

Author: How long do you usually stay here?

Lady: Normally, we spend half a day. We have lunch with our sisters, and then we leave.

Author: Do you have any suggestions for improving the visiting experience at Chung Ying Street?

Lady: They should add more shade here. It's too sunny and hot. They also need more places for drinking water. There are too few resting areas. There should be more resting spots on Chung Ying Street.

Author: After coming here so many times, have you ever visited the inside of the community, like going to see places like Sha Lan Ha Village?

Lady: No, I usually stay for half a day and don't have time to go there. Honestly, the museum is more comfortable. It has air conditioning, and there's a sea breeze and some shade on the seaside promenade. After seeing the mountains and the sea many times, there's nothing new to see.

Author: Alright, thank you, and I wish you a great time.

(7) Seventh Group Interviewee (A young man and his mother, in a restaurant near Yu Deng Wu Square)

Author: May I ask how many times you've been to Chung Ying Street?

Young Man: We live in Shenzhen, and we come here almost every month to buy daily necessities.

Author: Why do you choose to shop for goods here? Wouldn't it be more convenient to shop at other channels like large chain supermarkets or online stores?

Young Man: It's mainly because of the quality of Hong Kong goods. We've been using them for many years, and we're used to them. Online shopping means buying from different stores, while at Chung Ying Street, we can buy everything in one go.

Author: How long do you usually spend shopping at Chung Ying Street? Do you generally leave after having a meal here?

Young Man: About 2 hours. We generally don't eat here. There are too few dining

options here, and the prices are slightly higher than elsewhere.

Author: Besides shopping, have you experienced any cultural activities at Chung Ying Street? Have you learned about the history and culture of places like Sha Lan Ha Village?

Young Man: No, I'm also a Hakka, and my ancestors, like the Wu family of Sha Lan Ha, migrated from the north to Fujian and then to Shenzhen. Our village is nearby, it's just not as close to Hong Kong. So, I haven't felt any of the Hakka culture here in terms of culture and cuisine.

Author: If you were to make suggestions for improving the experience, what would they be?

Young Man: Overall, the current tourist experience is quite poor. There are too few facilities, and there's a lack of food and beverages. There aren't enough resting areas, and the quality of the tourist spots is not high.

Author: Thank you very much for your answers, and I wish you all the best.

- (8) Eighth Group Interviewees (Two young women who have just graduated from university, one from Wuhan and the other from Xi'an)

Author: Hello, may I ask if this is your first time visiting Chung Ying Street?

Wuhan Student: Yes, it's our first time here.

Author: What made you choose to visit Chung Ying Street?

Xi'an Student: Our main destination was Guangzhou for fun, and Shenzhen is close by, so we decided to stop by in Shenzhen. We chose to come here after reading online travel guides.

Author: I see. How long have you been at Chung Ying Street, and which places have you visited?

Xi'an Student: We arrived a little after 9 AM, so we've been here for about 4 hours. We initially planned to go through the border now, but there are too many people in line at the border, and it's also lunchtime, so we decided to have lunch here. We've only explored Chung Ying Street and the waterfront promenade.

Author: During your sightseeing, what activities have you primarily participated in? Are there any improvements you think could be made in terms of your experience?

Wuhan Student: We've just been walking around and looking, no shopping because we have to go to other attractions, and shopping would add to our burden. We suggest enhancing the local culture and history. We came here for a unique experience, but the Border Cultural Wall, for example, has some information, but it's

a bit boring. Everyone just takes photos and leaves; nobody really reads it. You could also introduce some cultural and creative souvenirs. I'd be willing to buy those.

Author: Thank you very much for sharing, and I wish you a pleasant journey to your next destination.

- (9) Ninth Group Interviewees (A young woman who has been living and working in Shenzhen for several years and her friend from out of town, at a restaurant)

Author: May I ask how many times you've been to Chung Ying Street?

Shenzhen Woman: This is the first time for both of us. I've been in Shenzhen for many years, and I never visited before because I wasn't interested. My friend came from out of town to visit me, and she wanted to go to Chung Ying Street, so I came here specifically to accompany her.

Author: How long have you been here at the moment? Which places have you visited, and how long do you plan to spend at Chung Ying Street?

Shenzhen Woman: We've been here for an hour, mainly strolling around Chung Ying Street and doing some shopping. We plan to stay for about 4 hours.

Author: Okay, did you store the items you purchased somewhere? I don't see you carrying them.

Out of Town Friend: Yes, we left them in the store where we bought them. Carrying them around would hinder our sightseeing. It would be great if there were a tourist center where we could centrally store our belongings.

Author: Your suggestion is quite practical. How do you feel about your experience regarding sightseeing, shopping, leisure, and dining at Chung Ying Street? Do you have any suggestions?

Shenzhen Woman: Well, there are too few dining options, cultural shops, and facilities here. We didn't come here just for shopping; it feels more like a wholesale market in this area (laughs). It doesn't feel like a high-end shopping street.

Author: Yes, in fact, the history of Chung Ying Street is quite unique and has a deep heritage. It used to be the most prosperous pedestrian shopping street in the country. However, with the opening up and reforms, people have more options for purchasing goods, and the area has gradually declined.

Shenzhen Woman: If the culture here is so special, more historical promotion and interpretation should be added. Currently, it feels too commercial, and things like the Cultural Wall are somewhat rough. There should be more fun facilities and activities;

it feels quite monotonous right now.

Out of Town Friend: Exactly, there could be some cultural and creative studios where tourists can experience handicrafts and get to know the local culture better. A place that combines business and culture like this would attract more people and lead to word-of-mouth recommendations.

Author: Thank you very much for your suggestions; they are inspiring. Besides the main street of Chung Ying Street, do you plan to visit and explore the community's inner areas?

Shenzhen Woman: We didn't know there were places to visit within the community. To be honest, we find the main street quite boring, so we were thinking of going elsewhere.

Author: There are many historical cultural relics and the Fish Lamp Dance Museum in the community, as well as Hakka life and culture in Sha Lan Xia Village.

Shenzhen Woman: That's great. After we finish eating, we'll go and take a look. I also have a suggestion: there are too few landmarks and signs here; it's difficult to find your way around. After touring Chung Ying Street, tourists don't know where to go.

Author: Alright, thank you very much for your valuable suggestions.

(10) Tenth Group Interviewee (A 9-year-old child, at a restaurant)

Author: Hello there! Is this your first time playing here? Do you live far from this place?

Young Boy: It's my first time playing here. I'm from Harbin, but we came to Shenzhen for medical treatment because I have rhinitis. Afterward, my family moved to Shenzhen.

Author: So, do you think this place is fun? What do you like the most here?

Young Boy: It's fun. Um, I don't have a most favorite thing.

Author: How long have you been here, and where have you been playing most of the time?

Young Boy: We came here at 10 in the morning, and we've been playing for 5 hours. We visited the museum.

Author: Besides the shopping street on Chung Ying Street and the museum, have you been to any other places?

Young Boy: No, but after lunch, my mom is going to take me to Tin Hau.

Author: Oh, so you're going to visit Sha Lan Xia Village later. If you were to suggest

improvements for this place, like adding facilities and activities to make it more fun, what would you recommend?

Young Boy: I think they should add some public exhibitions and craft displays. They could create a 1:1 model of a house and showcase antique furniture, like how people used to live in the past. We could go inside to explore. And for other houses, they could renovate them to make them more modern.

Author: Alright, thank you, young man!

- (11) Eleventh Group Interviewee (An elderly retiree in their 70s, under the big banyan tree near the Yu Deng Wu Square)

Author: Hello, have you been to Chung Ying Street before?

Elderly Person: It's been a long time since I last came here. Back in the 1980s, I used to come often to shop and watch movies. Chung Ying Street is quite different from how it used to be.

Author: Wow, you must know this place well. So, what's the main activity for your visit this time? How long have you been in Chung Ying Street?

Elderly Person: I came here just to stroll around, kill some time. I've been here for about 1-2 hours today.

Author: What places have you mainly visited?

Elderly Person: I haven't gone to other places, like the seaside boardwalk or Sha Lan Xia; it's not worth spending a lot of time there.

Author: Alright, during your leisurely visit, do you have any suggestions to improve the experience here?

Elderly Person: I don't have any suggestions.

Author: Thank you.

- (12) Twelfth Group Interviewees (An elderly couple in their mid-60s)

Author: Hello! Is this your first time visiting Chung Ying Street for sightseeing?

Elderly Lady: Yes, we're from Yunnan, and it's our first time here as tourists.

Author: How long do you plan to stay here?

Elderly Lady: Probably around 2 hours; we're about to take a break and leave.

Author: Apart from the main street of Chung Ying Street, have you visited other places within the community?

Elderly Gentleman: No, we haven't.

Author: How was your experience during your visit and shopping here? Do you

have any suggestions for improvement?

Elderly Lady: We have trouble walking, and we need to rest after just a few steps. So, we'd appreciate more resting areas and facilities for convenience.

Author: Alright, thank you.

(13) Thirteenth Group Interviewees (A high school student and his parents)

Author: Hello! Is this your family's first time visiting Chung Ying Street?

High School Student: Yes, it's our first time. We live in the city and came here by car.

Author: How long have you all been visiting here today?

High School Student: About 2 hours.

Author: Apart from the main street of Chung Ying Street, have you visited other places within the community?

High School Student: We only visited Chung Ying Street and the waterfront promenade.

Author: How was your overall experience during the visit and sightseeing?

High School Student: I think there's room for improvement in the street's appearance and overall atmosphere. It lacks a distinctive character.

Author: Thank you for sharing your thoughts, and I wish you all the best.

(14) Fourteenth Group Interviewee (A resident living in the Chung Ying Street)

Author: Hello, may I ask what your most significant experience is from living here?

Resident: Well, in terms of living here, I feel quite secure. There are daily patrols by the armed police, but there are also inconveniences, like not being able to host friends and family who have to leave on the same day.

Author: When you bring friends and family to Chung Ying Street for shopping and sightseeing, how much time do you usually spend?

Resident: About 3 hours.

Author: How do you think Chung Ying Street, as both a tourist attraction and a famous commercial street, attracts visitors?

Resident: I don't find it very appealing. It lacks distinctiveness, and they recently built a pagoda that isn't open to the public.

Author: If you were to provide suggestions to improve the experience here, what would they be?

Resident: My suggestion would be to remove some of the restrictions at the border crossing. This would make it more convenient for tourists to visit. When people

travel, they seek convenience. The current hassles can discourage many visitors from coming, so Chung Ying Street needs to transform itself.