

Built Form Typology and Design Guidelines

by Nathan Tseng and Garrett Klifman

Problem Statement

Taoping is located just 20km from the epicenter of the devastating Wenchuan earthquake of May 2008. The village sustained the most damage in the new town area and significantly lesser amounts in the periphery and 100 year core. Although the earthquake was responsible for significant loss of life throughout Sichuan, there were no fatalities in Taoping. However, many structures throughout the village sustained varying levels of damage from minor cosmetic damage to major structural failure and collapse. The earthquake was responsible for a significant amount of destruction, but also provides an opportunity for rebuilding and reorganization of the built environment.

The opportunity for rebuilding should be seen as an opportunity to not only commemorate the past, but also accommodate new development and typologies. The rebuilding of Taoping is important for cultural heritage and preservation, but reconstruction should not use a complete rebuilding technique of the entire built environment to a pre-earthquake state. Reconstruction of the oldest 1,000+ year buildings is important in preserving architectural history, but the village of Taoping should not be treated as a mere artifact. The village should be treated as a living entity that supports a healthy community of residents. The historic core of Taoping should be celebrated as a culture heritage site, but avoid petrification or turning the village into nothing more than a museum. This can be done by avoiding rebuilding to a static state, plans for Taoping should allow for modification and flexibility. The developments of guidelines in this document are aimed at achieving these goals.

Guiding Principles

An analysis of Taoping building typologies led to the development of rules to determine appropriate interventions for structures including, restoration, modification and new infill development. Design Guidelines for Taoping were also developed through an examination of Taoping building typologies. This analysis was completed in order to help meet design and historic preservation goals for the community. The historic old village, comprised of those structures which are 100 years to over 1000 years old, should be preserved as it is a unique architectural representation of the Qiang people. However, the village is also a dynamic living entity that supports the cultural and social fabric of the Qiang. Historic Preservation of the village should be balanced with opportunities for the modification of structures and new infill development. These guidelines will support the continued habitation and use of the historic town core as a living museum. The guidelines will also support opportunities for new development that are historically compatible and context sensitive.

Methodology

The Taoping building typologies began with an identification of properties that had a sufficient amount of qualitative and quantitative data for analysis. Buildings identified within the historic 100 year core included: 85, 98, 101, 114, 121, 133, 143, 144, and 145/146. Buildings in the peripheral zone outside the historic core identified included: 56, 58, 60/61, 64, 72, 76, 83, 92, and 131. Building and lot characteristics were collected and analyzed using a CAD file and base maps. Building attributes collected included: building height, building length/width, building volume, building shape, wall ratios, shared walls, lot shape, and lot coverage. Information on building façades was also collect-

ed using building dimensions and photo analysis, including: number of unique façades, window size/ratio, window spacing, door size/location, and fenestration. This information was compiled in a database and statistics including range, average, and standard deviation were calculated.

Identified Properties

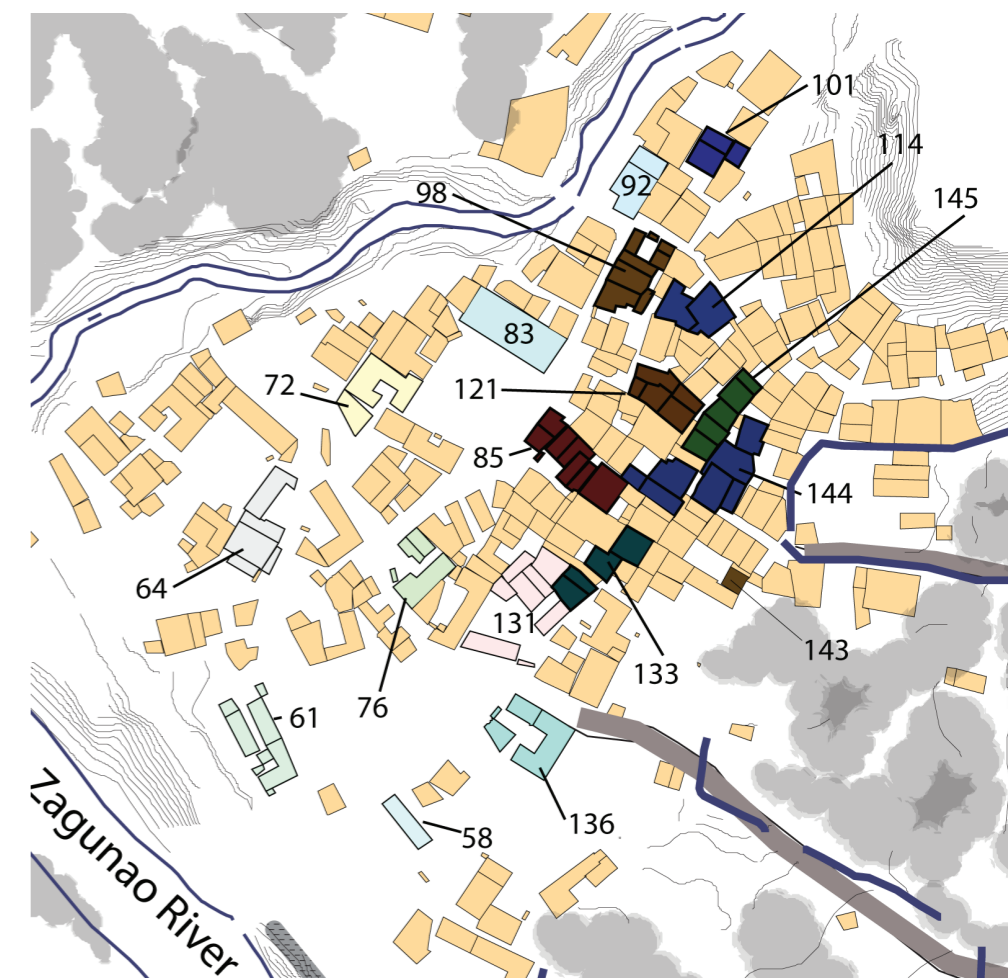


Figure 3.1 Buildings in the historic core are in dark colors, while periphery buildings are in light colors

Draft 30 March 2010

建筑类型与设计导则

Nathan Tseng and Garrett Klifman

问题陈述

桃坪距离512汶川大地震震中仅20公里。这个村寨的新寨部分受灾严重，100年历史核心区及其外围受灾较轻。虽然地震对整个四川省带来重大损失，但在桃坪无人死亡。但是，整个村寨的许多建筑遭受了不同程度的损坏，小到表面损伤，达到主要结构的损伤和整栋房屋的倒塌。地震造成严重的破坏，但也为重建和重组建成环境提供了一个契机。

这个重建的机会应该被视作一个不仅纪念过去，也同样包容新发展和新类型的机会。桃坪的重建对文化遗产和保护至关重要，但重建不应使用重建技术将其完全恢复到震前的面貌。对最古老的千年以上建筑的重建对保护建筑历史很重要，但整个桃坪村寨不应被当作一件艺术品。这个村寨应该被视作一个承载居民健康社区的活体。桃坪的历史核心是一种文化遗产，但应避免将其石化或是仅仅将其变成一座博物馆。这将避免重建一个静态的桃坪，桃坪的重建方案应该包含可修改性和灵活性。我们在这个部分对导则的制定正是旨在达成这一目标。

导则

对桃坪建筑类型的分析有助于制定导则，以此为结构采取适当的措施，包括修复、改造和新的填充式开发。桃坪设计指南也建立在对桃坪建筑类型分析的基础上。这个分析是为了社区实现设计和历史保护的目标而完成的。古老的历史村寨有着百年到超过千年的建筑，它应该被作为羌族人民的独特建筑代表被保留下来。但是，这个村寨同时也是一个动态的活体，承载着羌族的文化和社会结构。村寨的历史保护应该在与对结构的改造和新的填充式的发展取得平衡。这些指南同样将支持与历史和文脉相容的新发展。

方法

桃坪的建筑类型研究从对房产的归属开始，包含大量可供分析的定性和定量的数据。在100年历史核心区域的建筑门牌包括：85，98，101，114，121，133，143，144和145/146。在历史核心区外围区域的建筑门牌包括：56，58，60/61，64，72，76，83，92和131。我们通过CAD文件和地图来对建筑和基地特性进行收集和分析。建筑属性包括：建筑高度，建筑长/宽度，建筑容积，建筑形态，最短立面/最长立面比，共用的墙壁，基地形状，基地覆盖情况。建筑外墙信息也通过建筑尺寸和照片分析得以收集，包括：独立立面的

数量，窗的尺寸与比例，窗的间距，门的尺寸和位置，以及开窗情况。这些信息都被收集在数据库中，范围，平均值和标准方差等数据都被计算和分析。

房产的归属研究

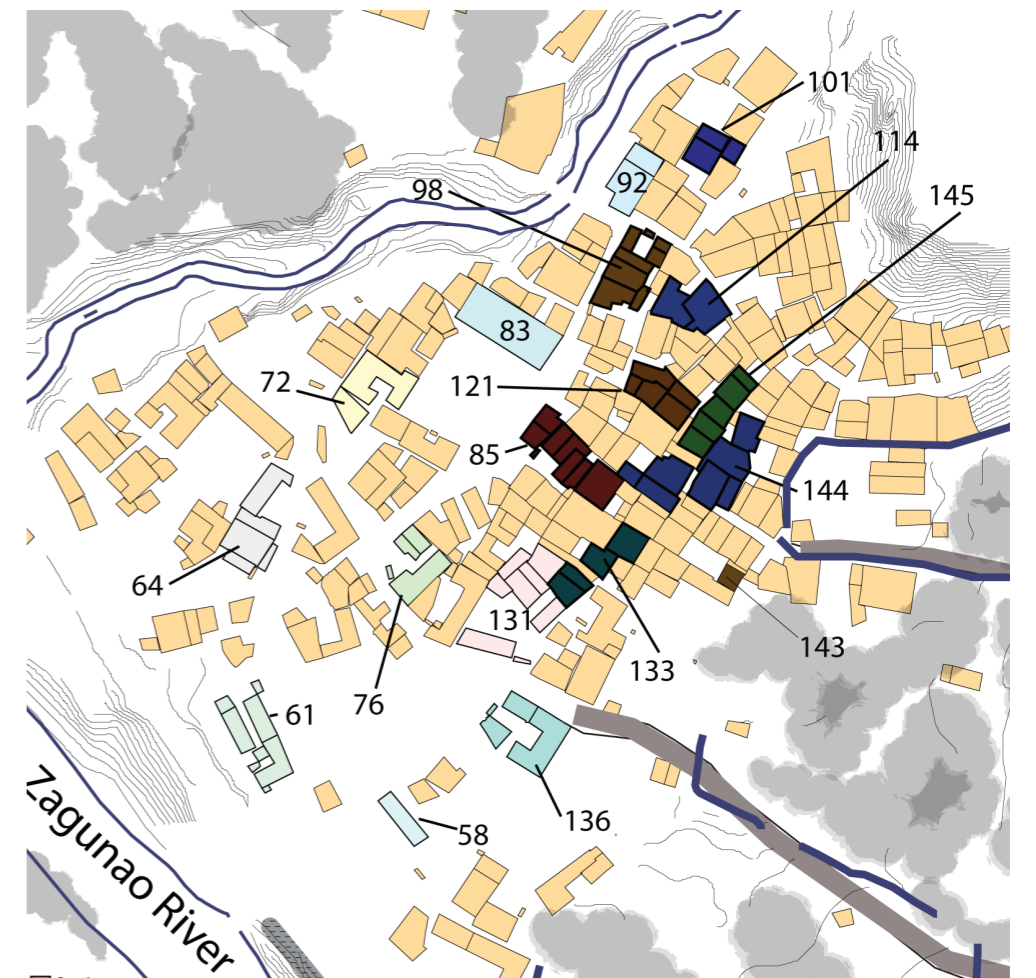


图3.1
历史核心区域的建筑用深色表示，外围建筑用浅色表示

2010年3月30日草稿

Zones of Taoping

1000 Year Core*

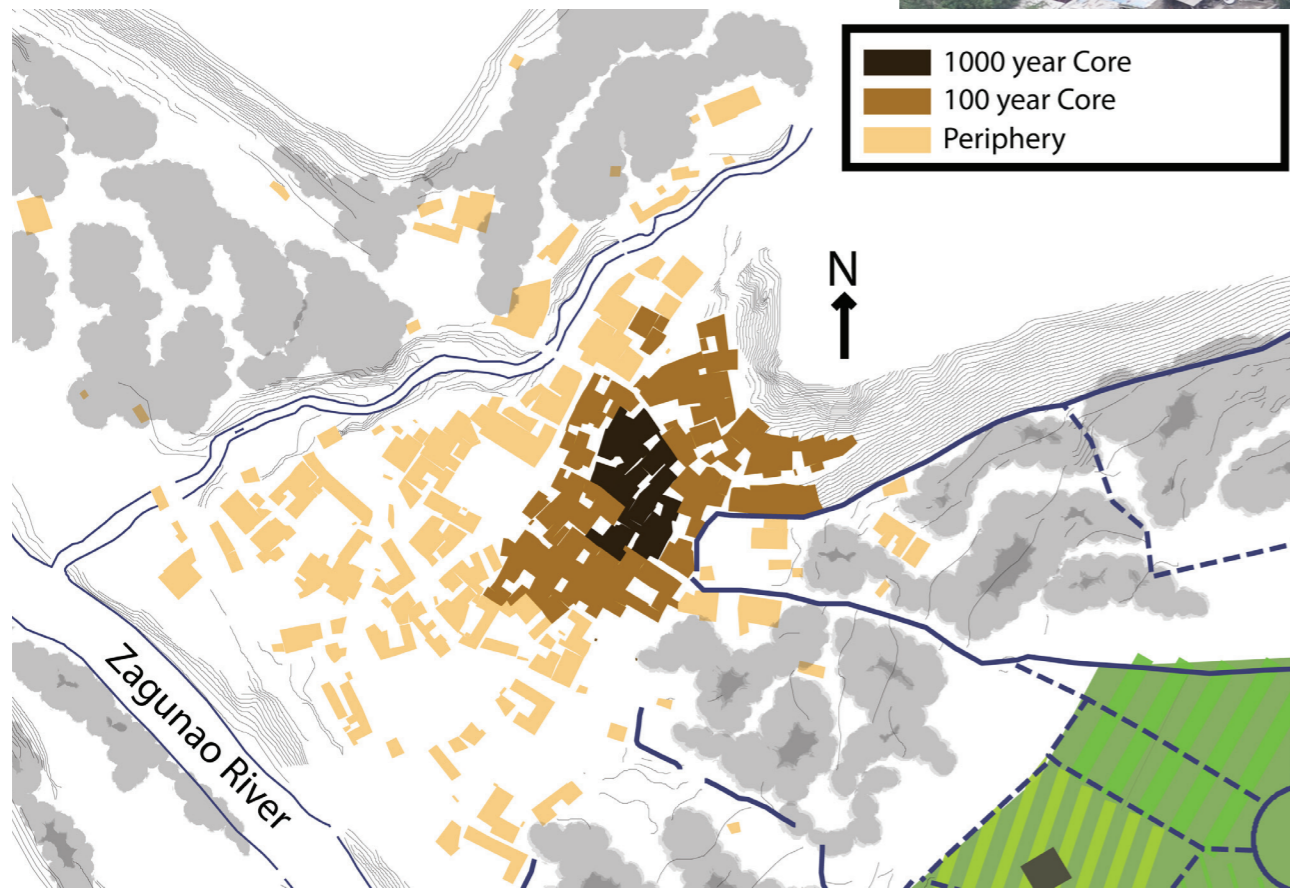
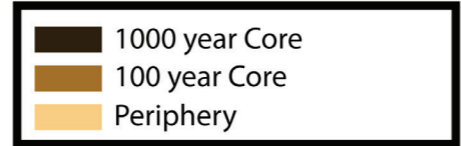


Figure 3.2

Periphery

100 Year Core

Figure 3.3

*Building ages determined through oral histories

Draft 30 March 2010

桃坪分区

千年历史核心

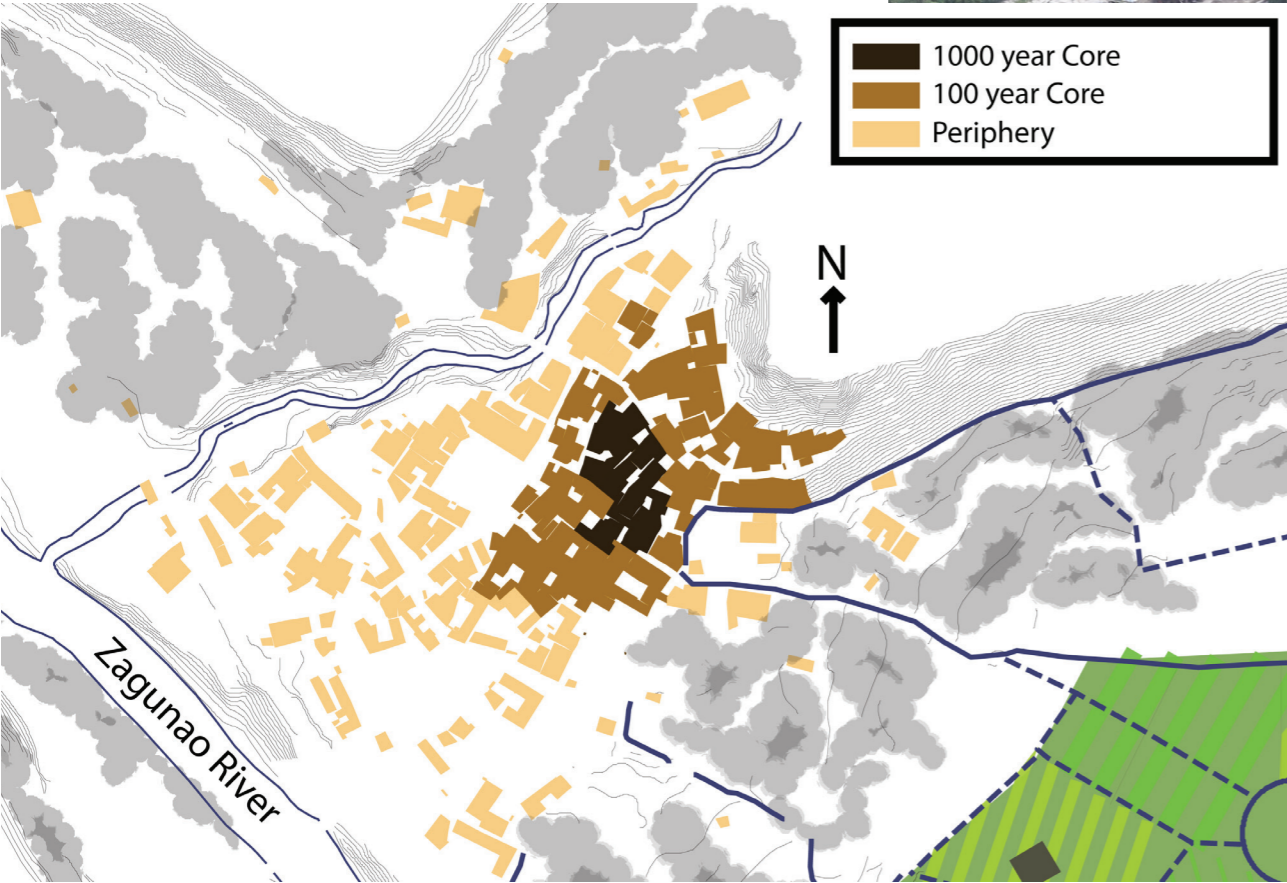


图 3.2

村寨周边

百年历史核心

图 3.3

*建筑的年代来源于口述资料

2010年3月30日草稿



UNESCO Heritage Guidelines

UNESCO is the United Nations Educational, Scientific and Cultural Organization (UNESCO) which seeks to encourage the identification, protection and preservation of cultural and natural heritage around the world considered to be of outstanding value to humanity

The World Heritage List includes 890 properties forming part of the cultural and natural heritage which the World Heritage Committee considers as having outstanding universal value.

UNESCO guidelines are outlined in the document Operation Guidelines of The Implementation of The World Heritage Convention. These guidelines are aimed at the protection and conservation of World Heritage Properties.

Taoping is on the tentative World Heritage List. Properties on the list should have both authenticity and integrity.

Authenticity

Depending on the type of cultural heritage, and its cultural context, properties may be understood to meet the conditions of authenticity if their cultural values (as recognized in the nomination criteria proposed) are truthfully and credibly expressed through a variety of attributes including:

- form and design
- materials and substance
- use and function
- traditions, techniques and management systems
- location and setting
- language, and other forms of intangible heritage
- spirit and feeling
- other internal and external factors

Integrity

Integrity is a measure of the wholeness and intactness of the natural and/or cultural heritage and its attributes. Examining the conditions of integrity, therefore requires assessing the extent to which the property:

- includes all elements necessary to express its outstanding universal value
- is of adequate size to ensure the complete representation of the features and processes which convey the property's significance
- suffers from adverse effects of development and/or neglect.

UNESCO protection and management

Protection and management of World Heritage properties should ensure that the outstanding universal value, the conditions of integrity and/or authenticity at the time of inscription are maintained or enhanced in the future.

All properties inscribed on the World Heritage List must have adequate long-term legislative, regulatory, institutional and/or traditional protection and management to ensure their safeguarding. This protection should include adequately delineated boundaries.



United Nations
Educational, Scientific and
Cultural Organization

<http://whc.unesco.org/>

Alternate Methods

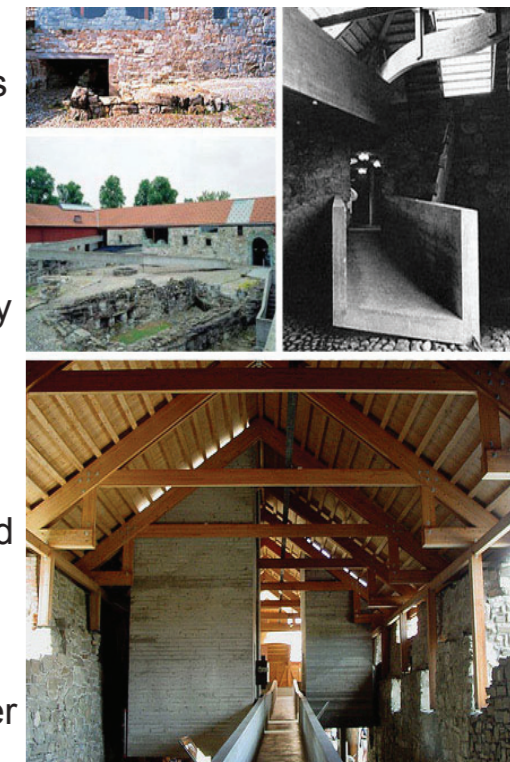


Figure 3.4

Carlo Scarpa's Castlevecchio Layers of history approach, where the complex layers of ancient and modern are intertwined. Like Taoping, site was constructed over time from 12th to 19th centuries. Restoration removed false contexts in order to achieve authenticity. Scarpa presented the past without nostalgia and allowed it to portray its own history through architecture. All layers of architecture should remain authentic to their distinctive time or period.

The Hedmark Museum designed by Sverre Fehn in Norway consists of medieval cathedral covered by a modern aluminum and glass canopy, which both protects and highlights the original building. He designed the new parts to contrast with the aged stonework in a way that creates a clear separation between old and new. Materials like wood and glass are used to contrast with the aged stonework and create a clear visual separation of old and new in the process, yet still remain historically sensitive to the older building.

Figure 3.5



Draft 30 March 2010

联合国教科文组织遗产导则

联合国教科文组织即联合国教育、科学和文化组织，旨在鼓励识别，保护和保存全世界的对人类具有突出价值的文化和自然遗产。

世界遗产名录包括890个世界遗产委员会认为有突出普遍价值的文化和自然遗产。

联合国教科文组织导则被列在《实施世界遗产公约操作指南》(Operation Guidelines of The Implementation of The World Heritage Convention)中。这些导则旨在保护世界遗产。

桃坪被列入世界遗产的申报名单。在这一名单中的遗产应兼具真实性和完整性。

真实性

依据文化遗产类别及其文化背景，如果遗产的文化价值（申报标准所认可的）之下列特征是真实可信的，则被认为具有真实性：

- 外形和设计；
- 材料和实体；
- 用途和功能；
- 传统，技术和管理体制；
- 位置和背景环境；
- 语言和其他形式的非物质遗产；
- 精神和感觉；以及
- 其他内外因素。

完整性

完整性用来衡量自然和/或文化遗产及其特征的整体性和无缺憾状态。因而，审查遗产完整性就要评估遗产满足以下特征的程度：

- 包括所有表现其突出的普遍价值的必要因素；
- 形体上足够大，确保能完整地代表体现遗产价值的特色和过程；
- 受到发展的负面影响和/或被忽视。

联合国教科文组织的保护和管理

世界遗产的保护与管理须确保其在列入名录时所具有的突出的普遍价值以及完整性和/或真实性在之后得到保持或提升。列入世界遗产名录的所有遗产必须有长期、充分的从立法、规范、机制和/或传统等各方面的保护及管理以确保遗产得到保护。



United Nations Educational, Scientific and Cultural Organization
<http://whc.unesco.org/>

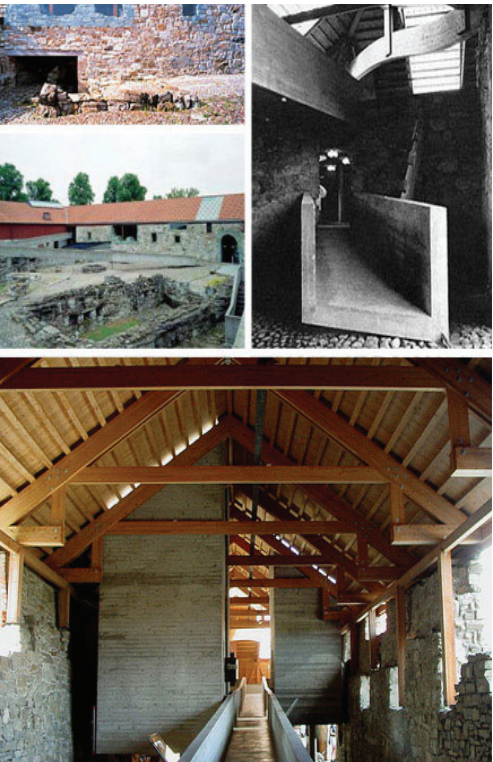
替换的方法



图 3.4

卡洛·斯卡帕的Castlevecchio历史分层法可以将繁复的古代和现代层面交织起来。以桃坪为例，它是在12世纪到19世纪建造起来的。修复去掉了虚假的语境以确保真实性。斯卡帕没有用怀旧的方式表达过去，而是通过建筑来描绘历史。建筑的所有层面都应该被真实保留，反映不同的时代。

图 3.5



Sverre Fehn 设计的挪威Hedmark博物馆是一个由现代铝材和玻璃制成的天篷覆盖的中世纪教堂，这个天篷同时保护和凸显了原先的建筑。他设计了这个全新的部分来与古老的石工形成对比，在新与旧之间创造了清晰的分界。在这个过程中，木头和玻璃之类的材料与古老的石工形成对比，创造了清晰的新与旧的视觉区分，同时对老建筑保持了历史的敏感性。

2010年3月30日草稿

Determining Level of Intervention

1000 Year Core

All buildings, regardless of damage should be **restored** to pre-earthquake state. Attempts to **repair** damage should be attempted before any type of **reconstruction** work is attempted. Reconstruction should use traditional building materials and methods of construction to restore the pre earthquake appearance as best possible. Following that all buildings should be **preserved and maintained**.

Reconstruction and Restoration should follow UNESCO guidelines, as Taoping is the tentative World Heritage List.



Figure 3.6 Buildings should be reconstructed to their original appearances

100 Year Core

Level of damage should be primary determinant of intervention method.

Those structures with little to no structural damage should be **repaired** to pre-earthquake state and **preserved and maintained**.

Structures with minor damage, but with more than 50% of the original structure standing should be allowed to **modify**.

New infill development on the original building site should be allowed when a building has sustained greater than 50% structural damage.

Building modification and modernization should be attempted before demolition and new infill development.



Figure 3.7 New infill development should be allowed if the original structure has sustained severe damage or has collapsed

Periphery

Method of intervention determined by location and level of damage.

Buildings that are directly adjacent to or bordering the 100 year core should be **repaired** to the pre-earthquake state if there is minor damage but allowed the flexibility of **modification**. If there is significant damage, **infill or reconstruction** on the site should be allowed.

Buildings not bordering the 100 year core should be given flexibility to **modify, modernize, construct new infill, or reconstruct** as long as new construction guidelines are followed.



Figure 3.8 Building close to the historic core should be subject to more design controls depending on level of damage



Figure 3.9 Newer buildings out in the periphery should be given more flexibility on construction

Draft 30 March 2010

介入程度

千年历史核心

所有建筑，不管损坏程度，都应该被复原到震前的状态。在任何类型的重建工作开始之前应该先考虑对损坏的修复。重建应当使用传统的建筑材料和方法去尽力恢复震前的面貌。随后所有的建筑都应该被保留和维护。

重建和复原应该遵循联合国教科文组织的导则，因为桃坪正是在世界遗产名录的申报名单中。



图3.6 建筑物应被复原为最初的形态

百年历史核心

介入程度主要由损坏程度决定。

结构很少损坏或者完全没有损坏的建筑应该复原到震前的状态，被保留和维护。

结构有所损坏，但至少50%原有结构完好的建筑应该被允许改造。

50%以上结构遭到破坏的建筑应该采纳全新的填充式开发。

在拆除重建和全新填充式开发之前应优先考虑建筑的改造和现代化。



图3.7 如果原有结构遭受严重损坏或者结构已坍塌，可以考虑全新填充式开发

外围区域

介入方法取决于建筑位置和受损程度。

对于直接相邻或者靠近百年核心建筑的外围建筑，如果有所损坏但具有改造的灵活性，应该被复原为震前的状态。如果有严重损坏，应考虑填充式开发或者重建。

只要遵守联合国教科文组织的导则，远离100年历史核心的建筑物可灵活地被改造，更新，填充式的开发或重建。



图 3.8 靠近历史核心区的建筑应该根据受损情况遵循更严格的设计规定



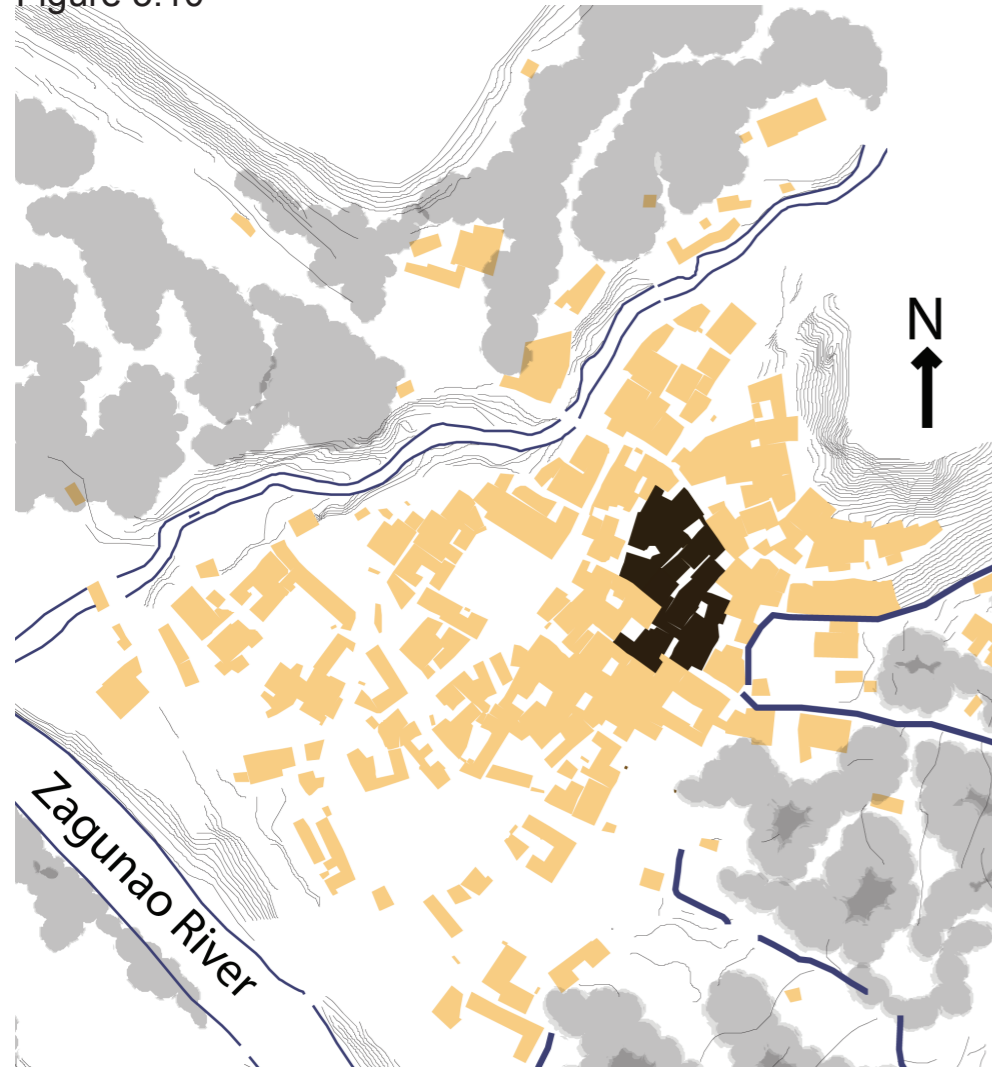
图 3.9 外围区域靠外的新建筑应被给予更多的建造灵活性

2010年3月30日草稿

Maps of Intervention

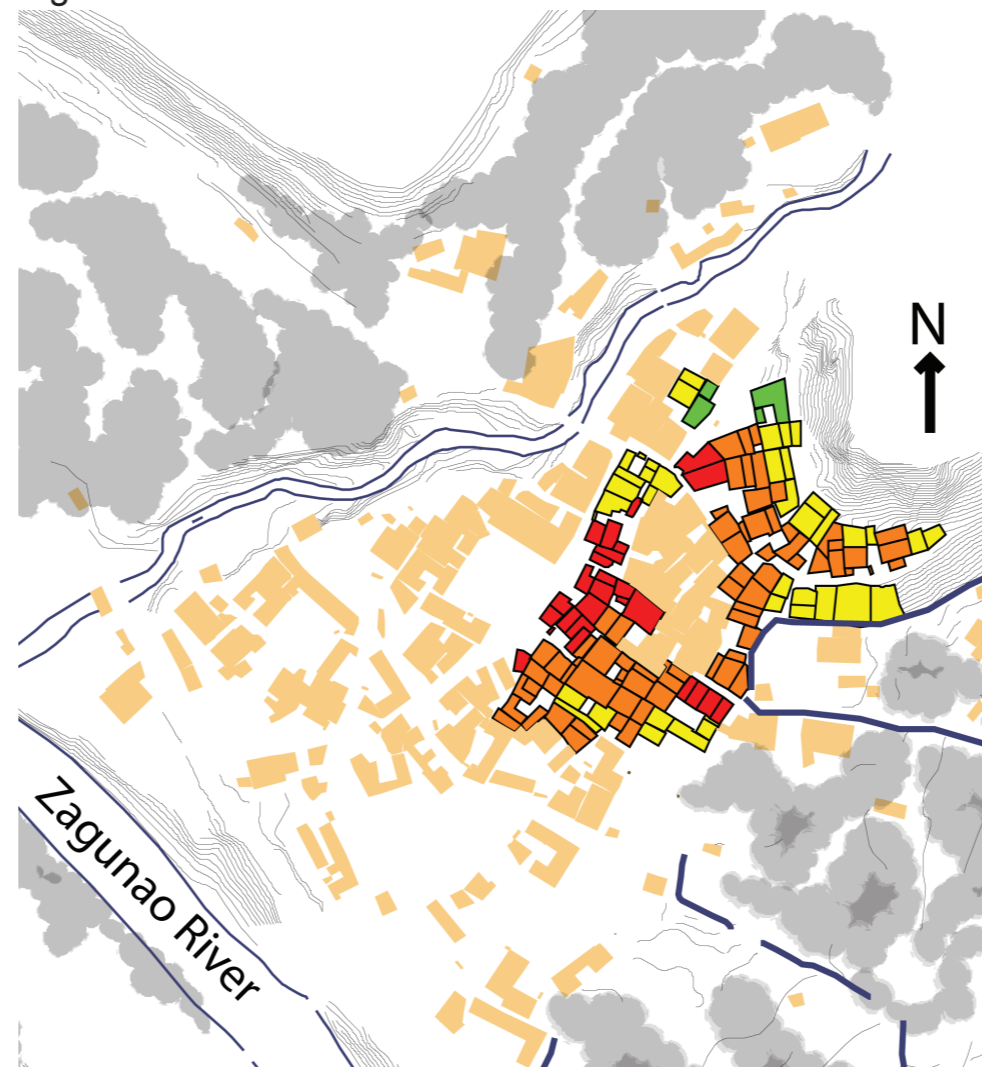
1000 Year Core

Figure 3.10



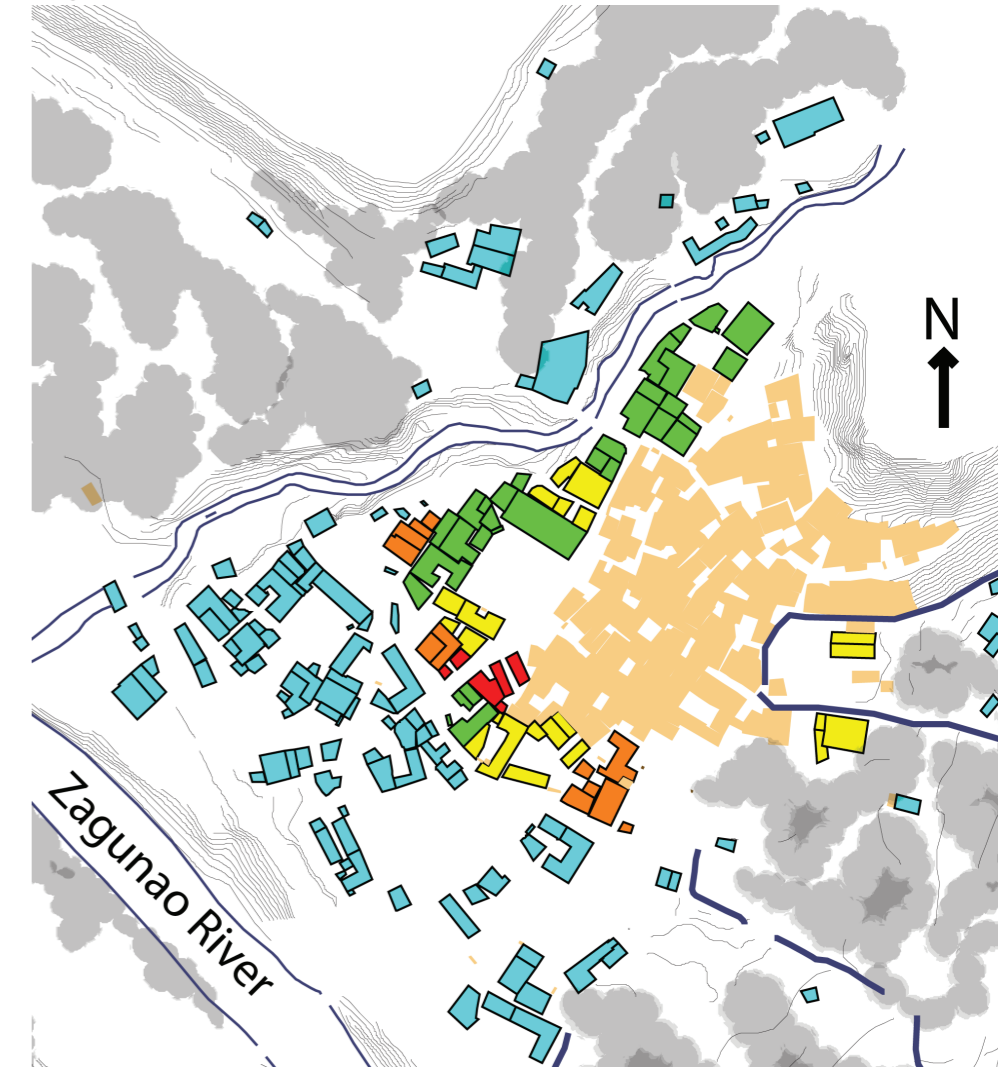
100 Year Core

Figure 3.11



Periphery

Figure 3.12



1000 year Core - Restoration

Collapse - Replacement/Infill
 Major Structural Damage - Modification/Infill
 Minor Structural Damage - Modification
 Cosmetic Damage - Preserve & Maintain

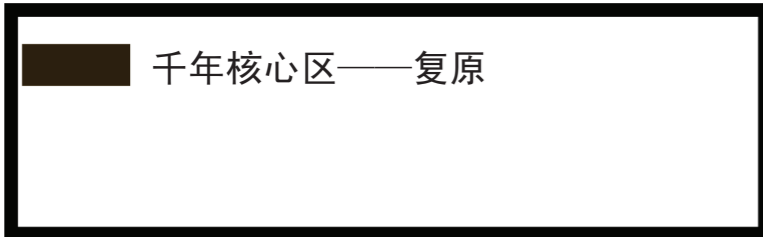
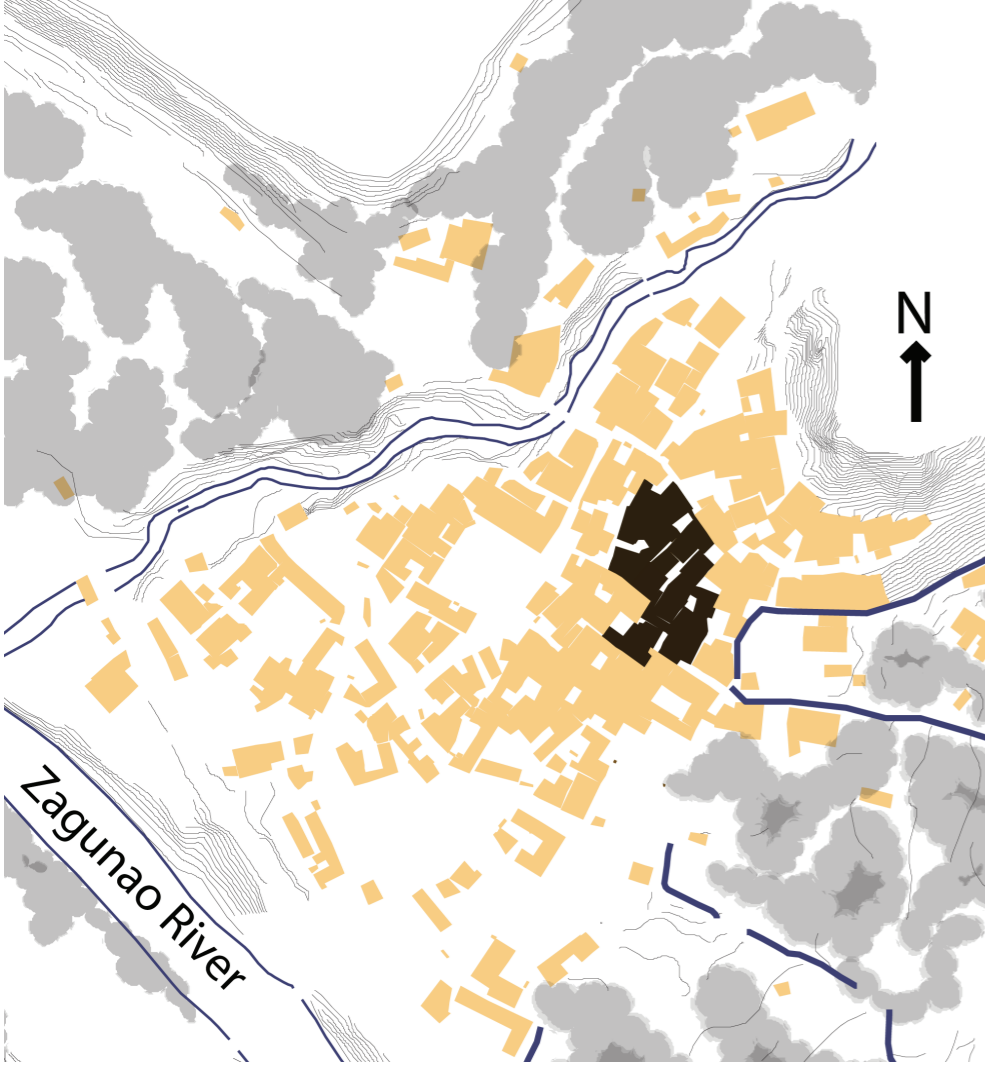
Inner Periphery
 Collapse - Replacement/Infill
 Major Structural Damage - Modification/Infill
 Minor Structural Damage - Modification
 Cosmetic Damage - Preserve & Maintain
 Outer Periphery
 Basic Design Guidelines

Draft 30 March 2010

分类保护地图

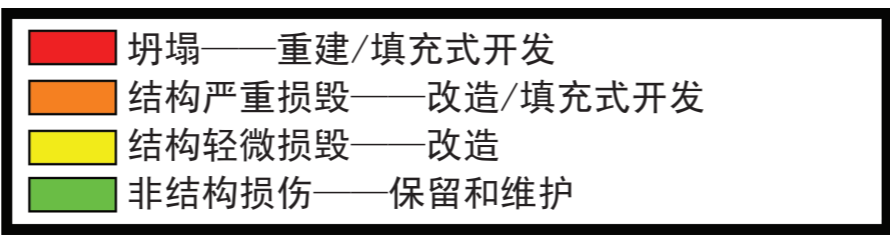
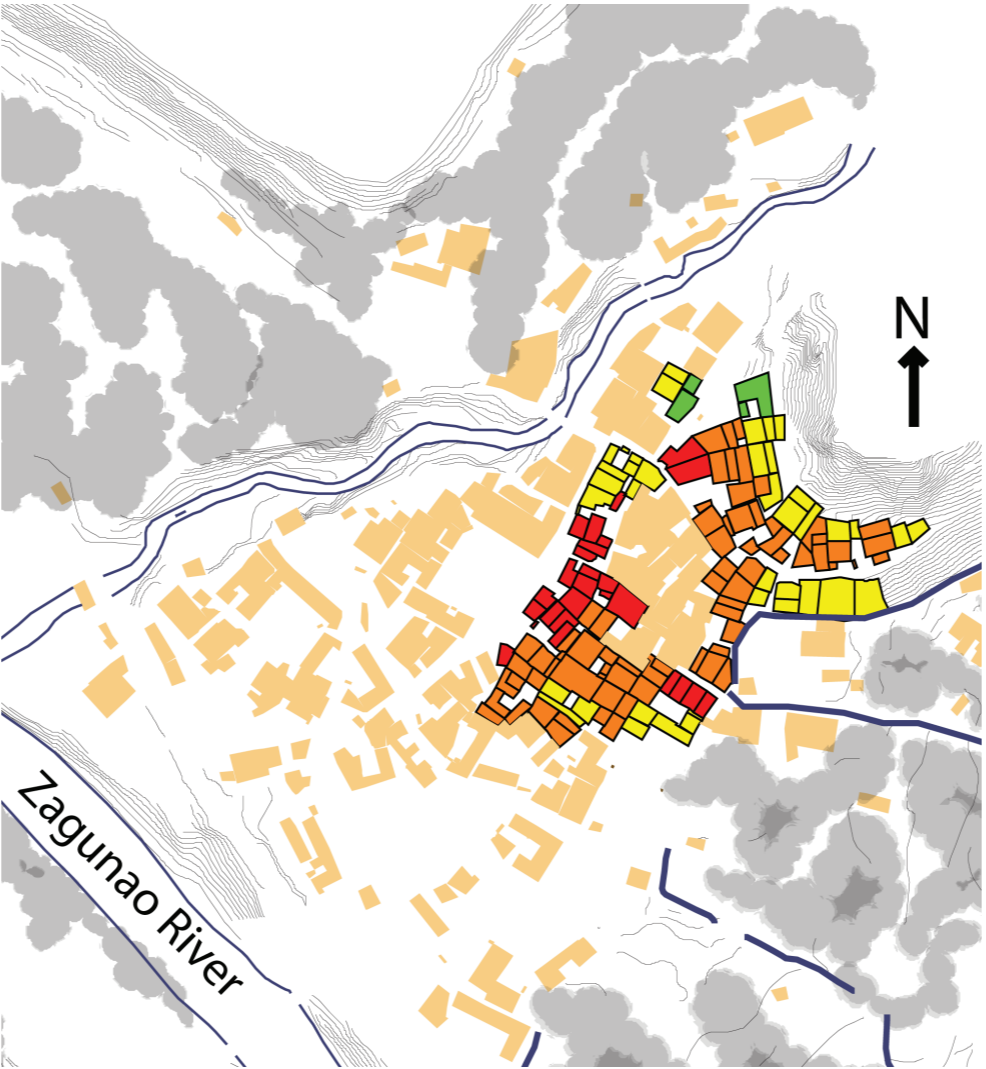
千年历史核心

图 3.10



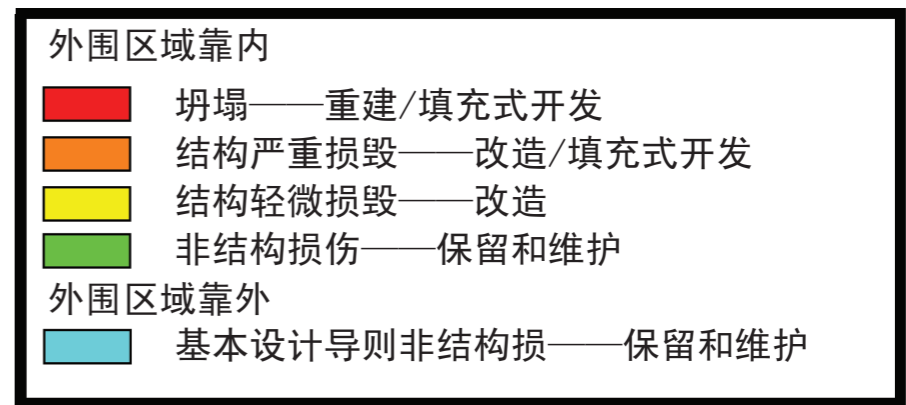
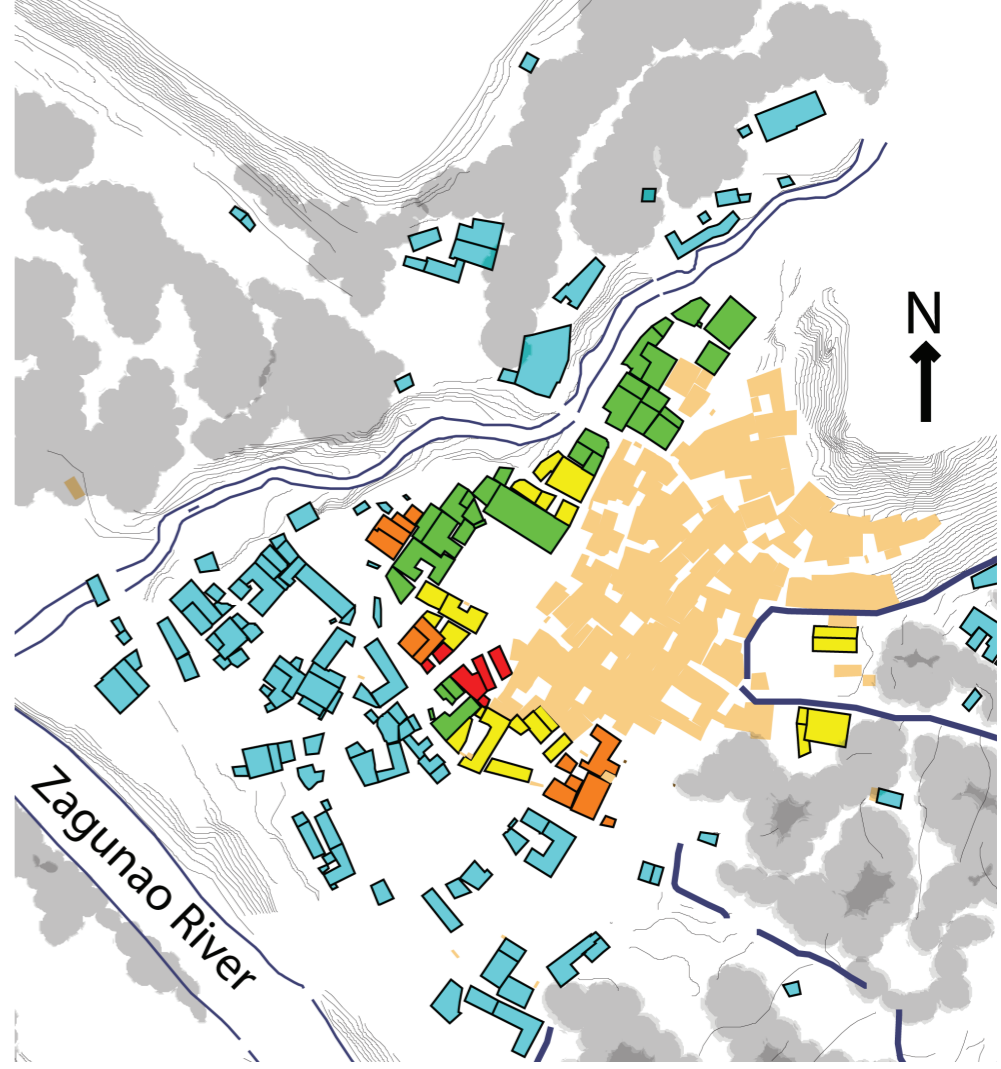
百年历史核心

图 3.11



外围区域

图 3.12



2010年3月30日草稿



100-Year Core

Existing Typology

The Old Core is a group of buildings that represent Taoping's original settlement. While the oldest buildings date from over a millenium, buildings between 100 to 1000 years also make up this historic core. It is characterized by a dense conglomeration of buildings with nearly all households having shared walls with others. Building heights in this part of Taoping are about 11meters on average, which is higher than in periphery development. Building are smaller in volume than in the Old Village periphery or the New Village with less lot coverage. Facades of some old core buildings contain "dou" windows, very small windows that have a smaller opening on the outside of the building envelope than the inside. These windows offer protection from rain and aid in letting in sunlight, while aiding in defense. "Dou" (斗) windows are also apparent in the three famous defense watchtowers of Taoping. Many façade sides have little or few windows, especially those directly facing other households. Window spacing is also greater here than in other parts of Taoping leading to low percent coverage of fenestration in the facades.

As the buildings are part of Taoping's original settlement, they demonstrate the character defining features of the Taoping building style and are representative of the distinctive Qiang architecture. These structures sustained the least amount of damage and the design features of these structures may have helped them survive earthquakes. The buildings in this part of the village also feature sloped walls that are significantly thicker at the base as well as a traditional stone slow building method that gives stability. The buildings share a large percentage of walls that provide structural stability, but also reinforce cultural patterns of use and space. These buildings also demonstrate the vertical layering of uses that integrate with adjoining buildings through walls and roofs. An examination of the buildings in the 100-year core shows that the built environment is heavily influenced by cultural patterns and should serve as inspiration for future development that reinforces these values by also allows for flexibility.



Figure 3.13 Typical 100-year core development pattern including watchtowers.



Figure 3.14 Traditional entryway, openspace, and materials.



Figure 3.15 Courtyard entry in 100-year core



Figure 3.16 Interior view of "dou" window

Figure 3.17 Taoping 100 year Core

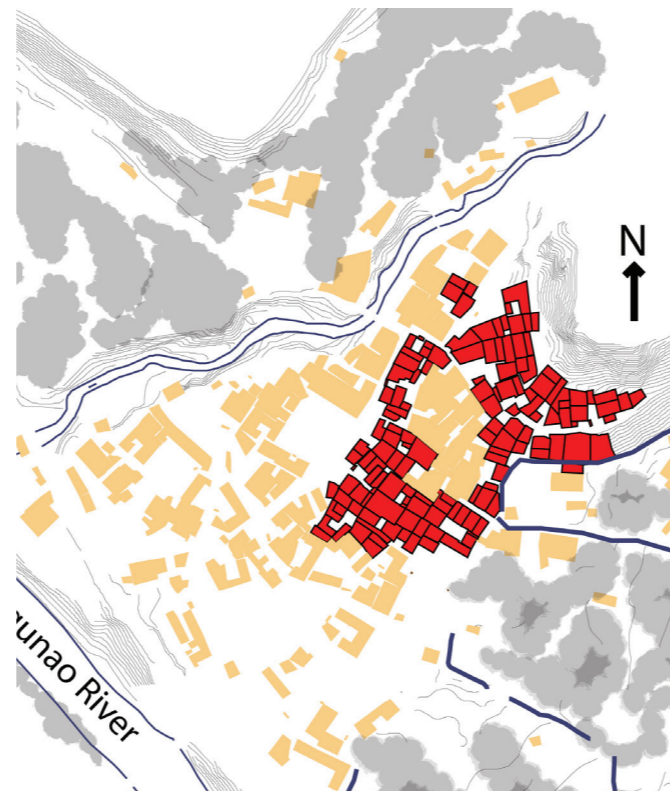


Table 3.1 Typology Summary Table

		Height in Stories	Height in Meters	Building Volume (m3)	Lot Coverage	Shared Walls	Window ratio	Average Window Spacing	Fenestrati on %	Door size
Old Core	Range	2-5	7.3-16.2	702.1-2018.4	65-96.3	18-55	1-1.67	1.1-3.2	1.11-16.67	2-3.4
	Average	3.4	10.7	989.5	86.57%	38.33%	1.3	2.6	9.76%	2.4
	Standard Deviation	1.0	2.6	433.8	10.95%	11.16%	0.3	1.1	5.32%	0.4

Table 3.2 Representative Sample of Lot and Plan Information Collected

House Number	Number of Lot Faces	Number of Façade Faces	Ratio of Longest to Shortest Façade	Lot Diagram	Plan Diagram
85	8	9	1.06:1		
98	6	8	2.01:1		

Draft 30 March 2010

百年历史核心

现存建筑类型

老核心区由一个代表桃坪原有居住区的建筑群。最古老的建筑建造于一千多年前，具有100到1000年历史的建筑同样是这个历史核心区的重要组成部分。它的特点是紧密相连的建筑，几乎所有的家庭都与邻舍共用墙壁。桃坪这个区域的建筑高度平均约为11米，高于外围区域的建筑。相比老寨外围区域或新寨，这里的建筑容积更小，场地覆盖率更高。一些历史核心建筑的外墙有斗窗，这是一种很小的、外壁开口小于内壁开口的窗户，提供防雨保护，满足采光，并且帮助防御。斗窗同样出现在桃坪三个著名的碉楼上。许多外墙开窗很少，尤其是在直接面向其他住户的立面。这里的窗间距也比桃坪其他地方更大，使立面的开窗覆盖率更小。

由于这些建筑是桃坪原有居住区的重要组成部分，他们展示了桃坪建筑的风格特点，是羌族独特建筑的代表。这些古老建筑的结构遭受了最少的损坏，也许正是它们的设计特点使它们在地震中幸存下来。村寨这个区域的建筑同样有着收分墙体，这些墙体在基础处厚得多，连同传统的缓慢石造方法，使建筑更坚固。建筑共用墙壁也增强了结构的坚固性，同时推进了使用与空间的文化模式。这些建筑墙体与楼板、屋面的相连也展示了建筑的垂直分层使用。对百年核心区域建筑的一项研究表明建筑环境受到文化模式的强烈影响，为今后的开发提供了灵感，这些开发将同样通过鼓励灵活性来强化这种价值。



图 3.13 典型的百年核心区开发模式，包括碉楼



图 3.14 传统的入口，开放空间和建筑材料



图 3.15 百年核心区建筑的内院入口



图 3.16 从室内看斗窗

图 3.17 桃坪百年历史核心

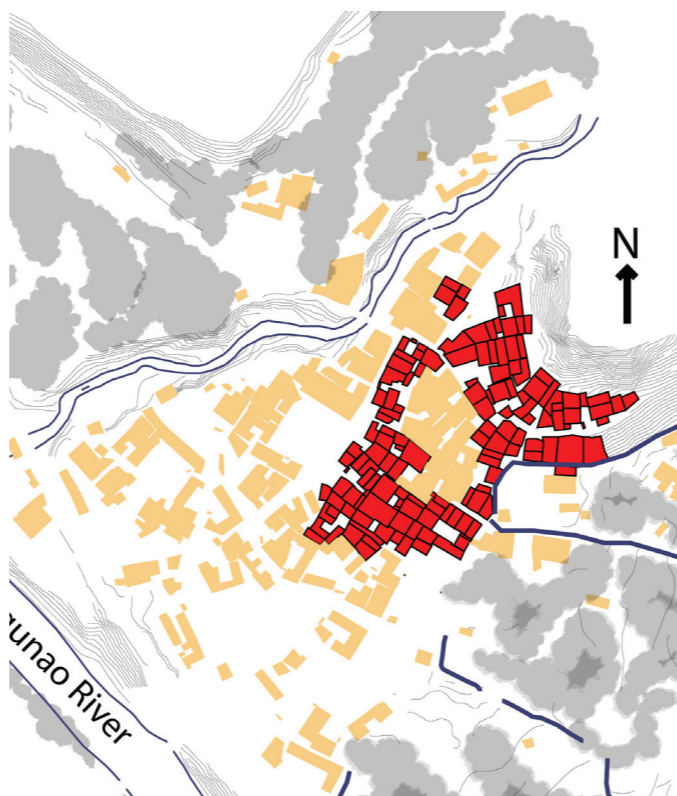


表 3.1 建筑类型表

		层高	楼高	建筑体量 (m3)	地块覆盖率	楼高	开窗率	窗户平均面积	开窗面积比	门的尺寸
历史核心	范围	2-5	7.3-16.2	702.1-2018.4	65-96.3	18-55	1-1.67	1.1-3.2	1.11-16.67	2-3.4
	平均值	3.4	10.7	989.5	86.57%	38.33%	1.3	2.6	9.76%	2.4
	标准方差	1.0	2.6	433.8	10.95%	11.16%	0.3	1.1	5.32%	0.4

表 3.2 地块与建筑平面的选例表

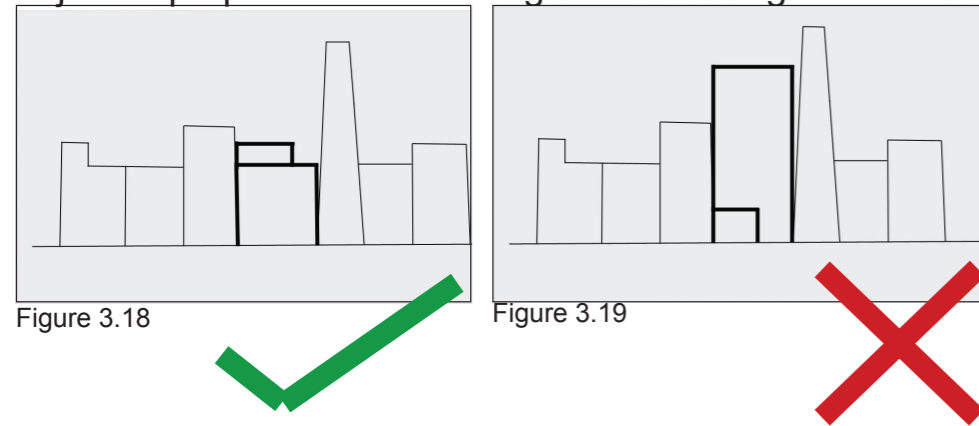
建筑门牌	地块边界数目	立面数目	最长与最短立面比	地块示意图	平面示意图
85	8	9	1.06:1		
98	6	8	2.01:1		

2010年3月30日草稿

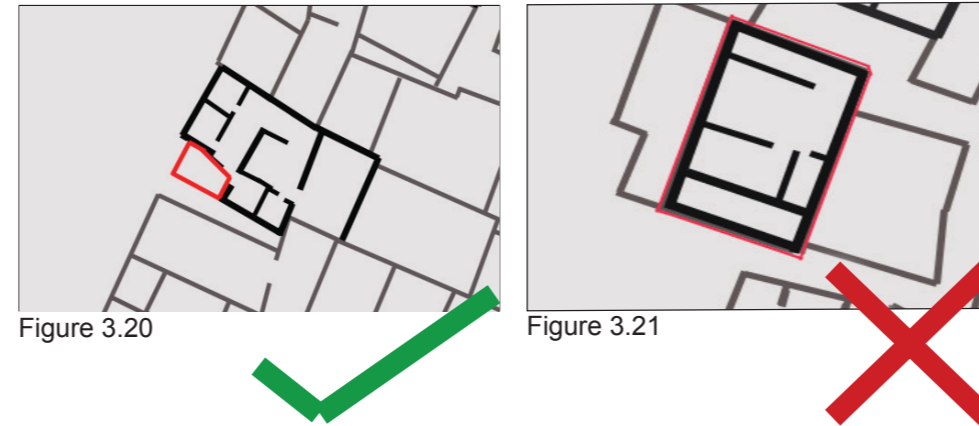
Design Guidelines

New Development in 100-Year Core

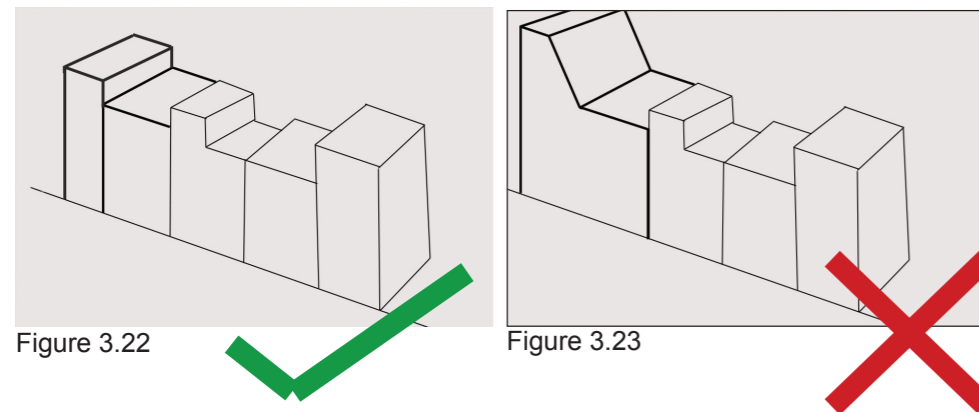
Building Height- An infill building should not be much lower or higher than the height of surrounding structures. Roof-lines of infill development may vary in height, but the general height of the existing facades should be maintained, 7.5 to 13.9 meter height limit, excluding watchtowers. Although, individual structural height will vary by location, structures' heights in floors should be within one floor of adjacent properties to encourage vertical integration.



Lot Coverage and Open Space- Lot coverage refers to the percentage of each land plot that is occupied by a building or permanent structure. The percentage of land left undeveloped is for building setbacks and open space such as courtyards. The appropriate range of lot coverage is 65% to 86.6% for structures with the remainder of the lot reserved for open space.



Building Volume and Mass- Projects should demonstrate evidence in their designs that they have studied predominant scale and proportions of the area in which they are proposing to build. New construction should be massed and have volumes similar to historic structures. Building volumes should be within 702.1 to 1285.7 cubic meters.



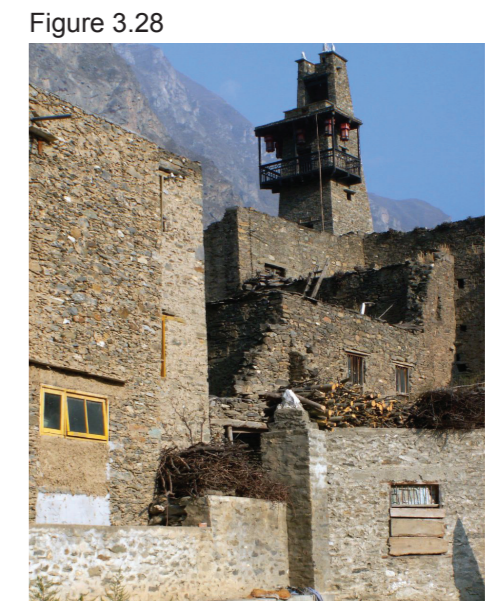
Shared Walls- Shared walls among structures in the historic core are a character defining feature of the Taoping Typology. All historic structures examined exhibit shared walls with adjoining buildings. New infill development in the historic core should have between 27% and 50% of exterior wall length as shared walls with adjacent structures.



Windows- Windows should be spaced evenly and far apart. Optimally windows and doors should be spaced every 3 m or more. If a wall faces another wall of a distance less than 2m away, there should not be any windows on that face unless it is of the "Dou" (斗) window type. These Dou windows should also be spaced every 3m or more.



Fenestration- Fenestration rates of buildings in the 100-year core should not exceed 10%.



Draft 30 March 2010

设计导则

百年核心区的新开发

建筑高度 —— 新的填充式建筑在高度上不应与周围建筑悬殊。天际线可以随着建筑物高度变化，但现有建筑立面（除了碉楼）的一般的高度应该被保留，约为7.5到13.9米。虽然个体的建筑高度会随位置不同而变化，相邻建筑的层高差异应小于一层，以保证垂直方向的整体性。

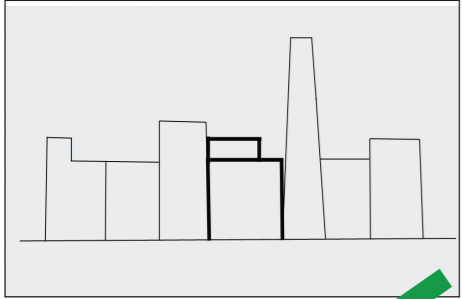


图 3.18

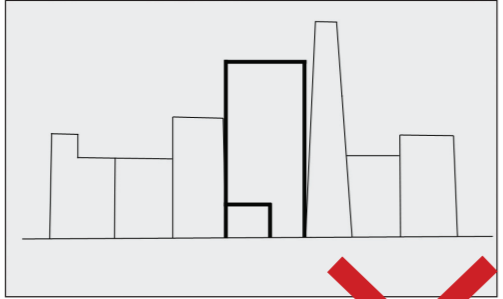


图 3.19

场地覆盖率和开放空间 —— 场地覆盖率是指每块场地中建筑或永久性构筑物所占的比例。未被占用和开发的土地所占的比例则用作建筑后退距离和类似庭院的开敞空间。合理的场地覆盖率应在65%到86.6%，余下的地块留作开放空间。



图 3.20

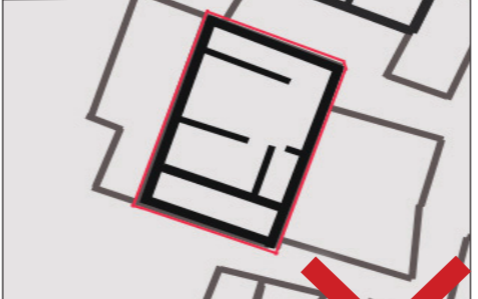


图 3.21

窗户 —— 窗户应该均匀间隔，相互远离。最佳的门窗间距应该至少为3米。如果一面墙面对另一面墙的间距小于2米，墙上就不应开窗，除非是以斗窗的形式。这些斗窗也应该间距至少3米。

图 3.26

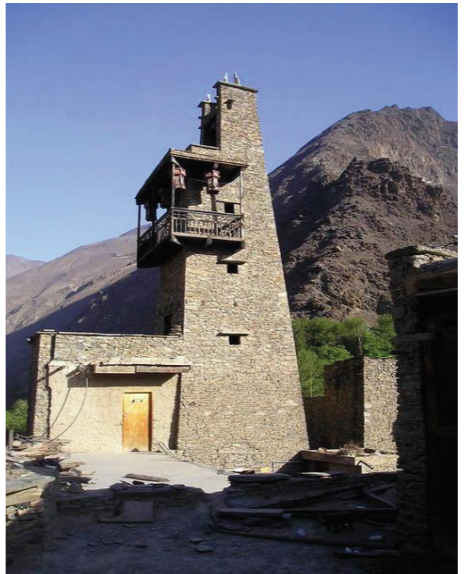


图 3.27



建筑体量 —— 项目建设应该在设计中提供证据证明他们已经研究了待建区域的建筑规模和比例。新建筑的体量应该接近于历史建筑。建筑体积应该在702.1-1285.7立方米之间。

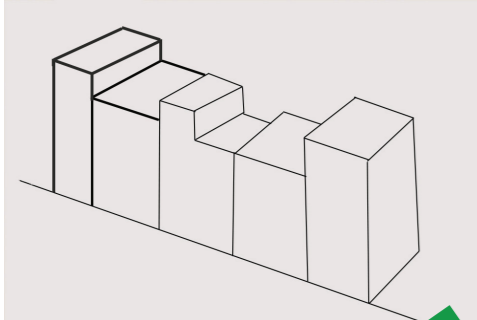


图 3.22

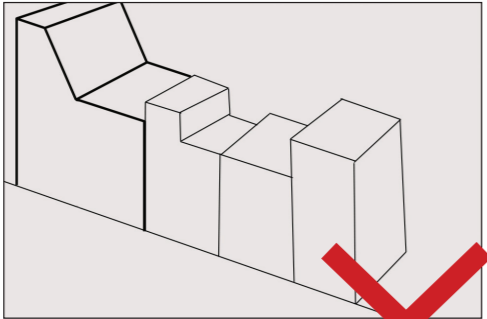


图 3.23

共用的墙体 —— 在这个历史核心区的构筑物中共用的墙体正是定义桃坪建筑类型的重要特征。所有被研究的历史建筑都与相邻建筑共用墙体。这个历史核心区域的新的填充式开发应该有27%到50%的外墙与相邻建筑共用。



图 3.24



图 3.25

开窗 —— 在百年核心区的建筑开窗比例不应超过10%。

图 3.28



2010年3月30日草稿

Village Periphery

Existing Typology

The periphery consists of buildings constructed more recently. Almost all of the buildings are less than 50 years old and have different spatial characteristics compared to buildings in the old core. Building heights are more consistent, with an average of 2 stories at about 8 meters, which is less than in the old core. Building volumes are generally larger, but also vary more ranging from 394 to 1926 cubic meters. As buildings aren't condensed into one dense mass, lot coverage for buildings in this area are greater than the historic core and are far less likely to share walls with other properties. Any sharing of walls occurs only between 1 or 2 other properties. Windows are larger and spaced closer to each other than in the old core, leading to higher rates of façade fenestration.

The buildings in the periphery demonstrate a shift in both design and technology. As the village expanded, development patterns show an organic growth outward from the 100-year village. The majority of these structures show a significant departure from established design features found in the 100-year core. Some buildings show features like stacked stone and shared walls, but this is significantly less than older structures. There is also a lack of many features that support the social and cultural vitality of the village, like open spaces and shared roofs. The scale of these structures is significantly less than older buildings which makes shared walls and vertically layering of uses more difficult. Because more variation exists here, there is greater flexibility for new construction and modification. New design here should blend with exiting typology, but also provides opportunity for development of features that reinforce traditional living methods, like shared walls and usable roof space.



Figure 3.29 Typical periphery dwelling



Figure 3.30 Meeting Hall in peripheral area



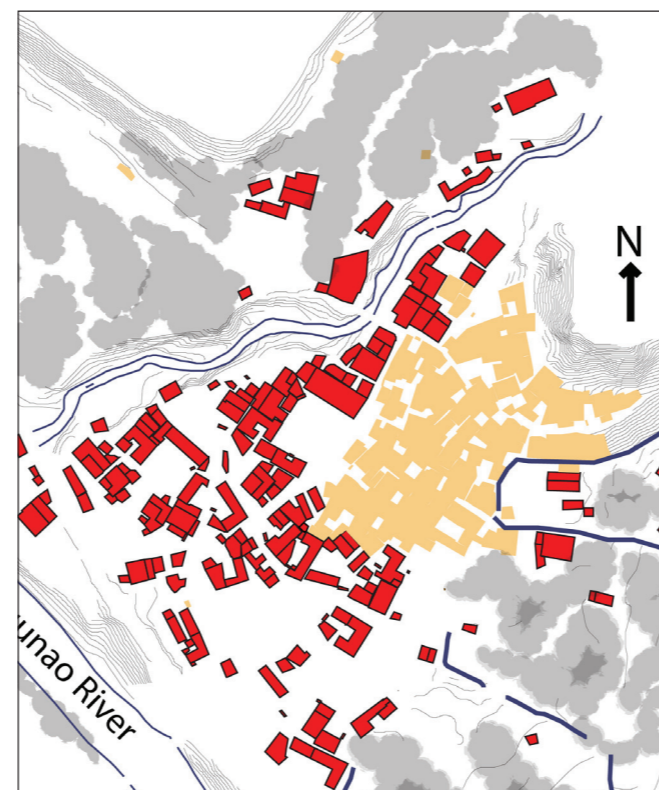
Figure 3.31 Periphery entry with modern opening and materials



Figure 3.32 Peripheral development with modern materials and larger fenestration

Figure 3.33

Context Map of Taoping Village Periphery Table 3.3 Typology Summary Table



		Height in Stories	Height in Meters	Building Volume (m ³)	Lot Coverage	Shared Walls	Window ratio	Average Window Spacing	Fenestration %	Door size
Periphery	Range	1-3	5.8-9.1	394-1926.4	68-100	0-53	1-1.21	0.45-3	5.14-42.35	1.44-6.27
	Average	2	7.9	1171.9	88.00%	23.44%	1.0	2.1	19.54%	2.5
	Standard Deviation	0.5	0.9	743.8	9.89%	24.18%	0.2	1.4	11.63%	1.5

Table 3.4 Representative Sample of Lot and Plan Information Collected

House Number	Number of Lot Faces	Number of Façade Faces	Ratio of Longest to Shortest Façade	Lot Diagram	Plan Diagram
56	4	4	1.18:1		
58	5	4	2.15:1		

Draft 30 March 2010

村寨外围区域

现存建筑类型

外围区域的建筑大多在近年建成。几乎所有的建筑都不超过50年，并且与老核心区建筑有着不同的空间特性。建筑高度为比较接近的2层8米高，比老核心区要矮。建筑体量普遍更大，变化范围也更大，从394到1926立方米。由于建筑并没有聚集为一个密集的建筑群，这个区域的场地覆盖率要比历史核心区大，并且共用墙壁的情况少见得多。只有1到2户之间存在共用墙壁的情况。窗户大得多，间距比老核心区小，使立面开窗率更高。

外围区域的建筑展示了建筑设计和技术的变迁。随着村寨的扩张，开发模式显示了一种百年核心区域向外的有机生长。大多数建筑物都显示了与百年核心区发现的传统设计特性的显著分离。一些建筑仍有砌石工艺和共用墙壁，但相比老建筑，这种情况要少得多。新建筑也缺乏很多承载村寨社会和文化生命力的特征，比如开放空间和共用的屋顶。这些建筑物的规模远小于共用墙壁和有着更复杂垂直分层使用的老建筑。因为有了更多的变化，新建筑和改造有了更大的灵活性。这里的新设计应该与现有的建筑类型相结合，并且应强化传统居住方式的建筑特性提供契机，比如共用的墙壁和可用的屋顶空间。



图 3.29 典型的外围区域建筑



图 3.30 外围区域的大会堂



图 3.31 有现代材料和设计的入口



图 3.32 有着现代材料和更多开窗的外围区域新建筑

图 3.33 桃坪边沿区的地图



表3.3 建筑类型表

		层高	楼高	建筑体量 (m ³)	地块覆盖率	楼高	开窗率	窗户平均面积	开窗面积比	门的尺寸
历史核心	范围	1-3	5.8-9.1	394-1926.4	68-100	0-53	1-1.21	0.45-3	5.14-42.35	1.44-6.27
	平均值	2	7.9	1171.9	88.00%	23.44%	1.0	2.1	19.54%	2.5
	标准方差	0.5	0.9	743.8	9.89%	24.18%	0.2	1.4	11.63%	1.5

表3.4 地块与建筑平面的选例表

建筑门牌	地块边界数目	立面数目	最长与最短立面比	地块示意图	平面示意图
56	4	4	1.18:1		
58	5	4	2.15:1		

2010年3月30日草稿

Design Guidelines

New Development in Village Periphery

Building Height- New Construction in the peripheral areas should fall within the existing range of 5.8 to 9.1 meters in height. Development can vary in height, but existing façade heights of nearby and adjacent properties should be maintained.

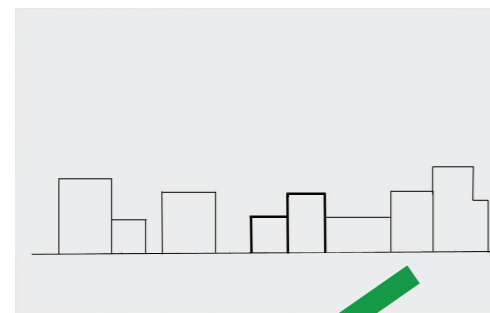


Figure 3.33

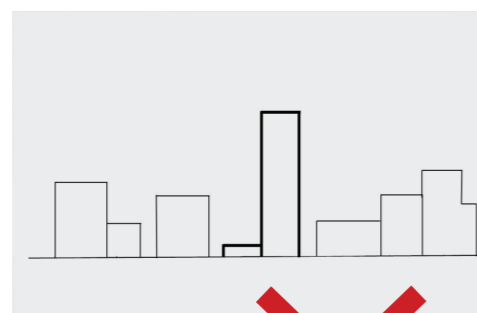


Figure 3.34

Lot Coverage and Open Space - Lot coverage in the peripheral areas is significantly more than in the historic core. Although some lots have 100% lot coverage, lots should not be built out in these areas and open space included. Lot coverage for development in this area should range from 68% to 87.2%

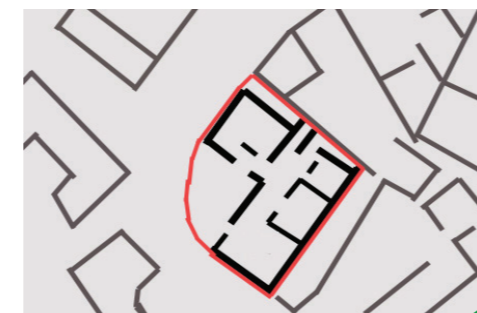


Figure 3.35

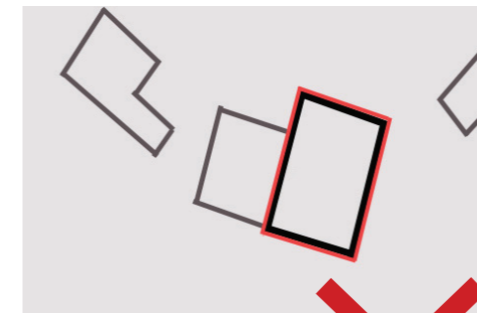


Figure 3.36

Building Volume and Mass- Development in the peripheral area can vary in terms of volume and massing, but should fall within a range present in existing structures and be contextually sensitive to the old village core historical character. New buildings should have a volume within the range of 820.3 to 1523.5 cubic meters

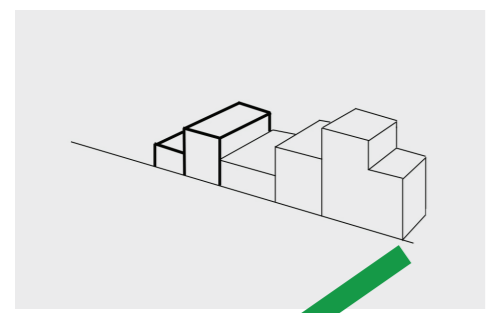


Figure 3.37

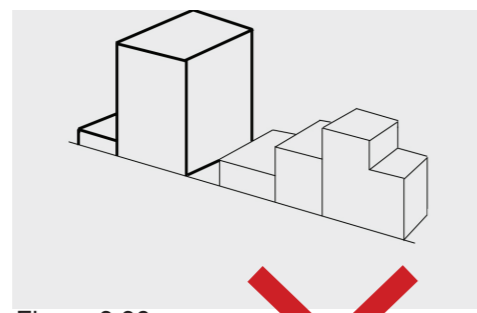


Figure 3.38

Shared Walls- Shared walls among structures are also prevalent in peripheral development. If lots adjoining new buildings are developed, shared walls should be encouraged when feasible. Based on existing typology, new construction in peripheral development should dedicate 16% to 30% of exterior wall length for shared walls.

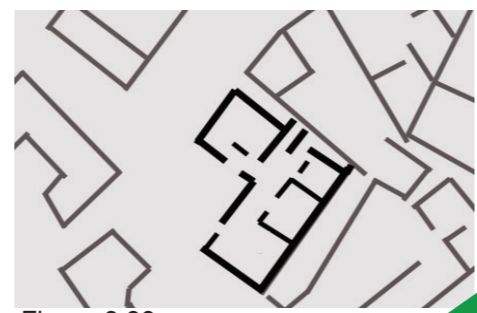


Figure 3.39

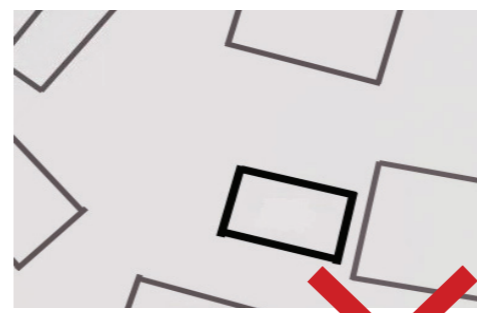


Figure 3.40

Windows- Windows and doors should be 2m or less apart. Windows built should be of the non-“Dou” (斗) type. Window length/height ratios should be between 1 and 1.5. The shortest length should be at least 1 meter.

Figure 3.41



Fenestration- Fenestration rates should be higher in the periphery due to larger window sizes. A recommended fenestration rate is between 10% and 50%.

Figure 3.42



设计导则

村寨新开发

建筑高度 —— 外围区域的新建筑高度应控制在现有高度范围内，约5.8到9.1米。建筑可以在高度上取得变化，但附近的现有建筑立面高度应该被保留。

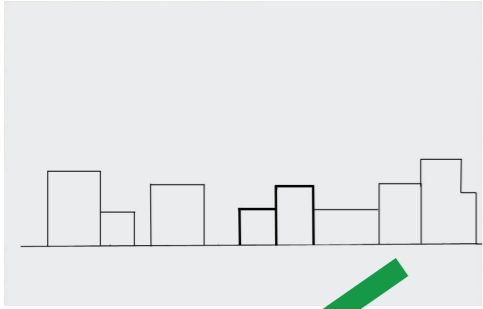


图 3.33

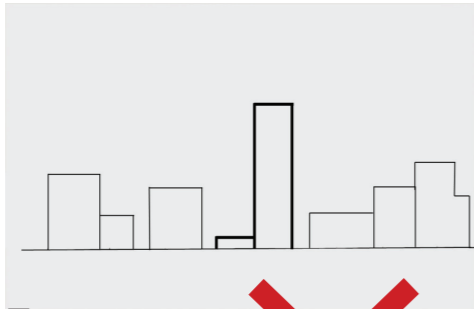


图 3.34

建筑体量 —— 外围区域的建筑在体量上可以有所变化，但应该在现有建筑体量范围内，以与老寨历史核心区的历史特征保持协调。新建筑的体量应该在820.3到1523.5立方米的范围内。

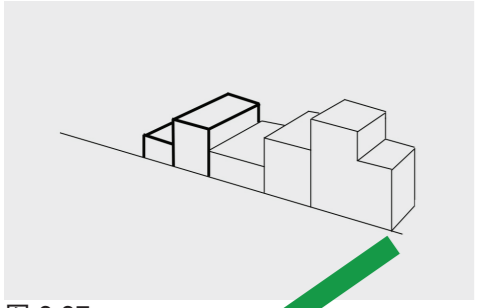


图 3.37

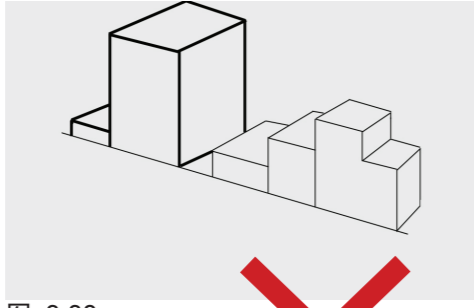


图 3.38

场地覆盖率和开放空间 —— 外围区域的场地覆盖率远大于历史核心区。虽然一些场地覆盖率达到100%，这个区域的场地不应该被建筑占满，应留有开放空间。此区域的场地覆盖率应在68%到87.2%的范围内。

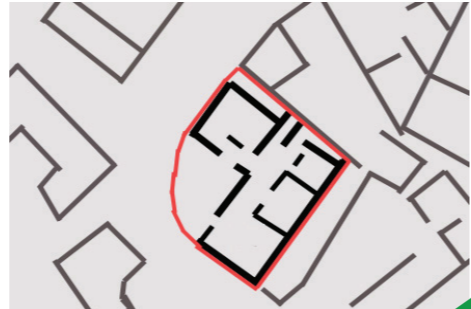


图 3.35

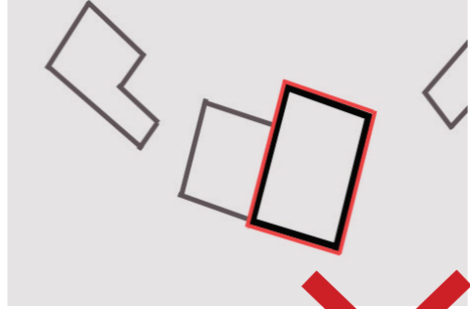


图 3.36

共用的墙体 —— 共用的墙体在外围区域建筑中依然常见。如果要在场地开发相邻的建筑，可行时应鼓励使用共用的墙体。以现有建筑类型为基础，外围区域的新建筑应该有16%到30%的墙体与相邻建筑共用。

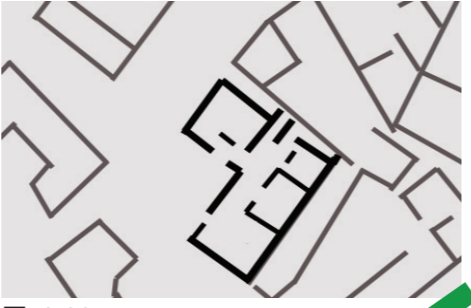


图 3.39

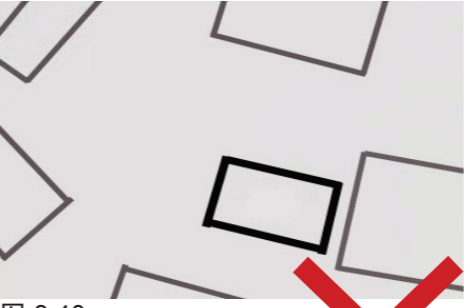


图 3.40

窗户 —— 门窗间距不应超过2米。窗户的形式不应为斗窗。窗的长/高比应在1到1.5之间。长度至少为1米。

图 3.41



开窗 —— 因窗户尺寸变大，外围区域的开窗率应该更大。推荐的开窗率为10%到50%。

图 3.42



2010年3月30日草稿

Guidelines for Building Modification

Interior Space Definition

A building can be divided between primary spaces and secondary spaces.

Primary spaces are those that define the overall historic character of the building and ones which are most visible to the public. In the case of Taoping's old architecture, this includes living rooms and the central stove.

Secondary spaces are rooms that service the building such as storage rooms, meat curing rooms, bathrooms, bedrooms or basement animal rooms.

Additions

- 1) New additions should be designed in a way so it is clear what is historic and what is new. Exact form, material, style should not be duplicated in new addition making the new addition appear as part of the historic building
- 2) Construction of new additions should occur in a way that lessens loss of historic materials in the historic structure.
- 3) Exterior additions should be placed at the rear or an other less visible part of the historic structure.
- 4) The addition should be at an appropriate size/scale in relation to the historic structure. It should not become a dominant part of the building.
- 5) Additions should conform with new development guidelines

Roofs and Half floors

- 1) Replacement roof material should match original material and color as much as possible
- 2) If a building with an existing flat roof does not have a half floor, one may be constructed, provided it does not exceed 50% of the floor area or damage historical or structural integrity of the building.
- 3) A half floor previously modified in the past 50 years may be may be extended to up to 50% of the floor area.

Doors and Windows

- 1) Existing door and window locations and dimensions should not be altered and any replacements should be of same dimensions.
- 2) Fenestration rates should be kept constant.
- 3) Historic doors and windows should be retained as best possible
- 4) Doors and windows should only be replaced if condition is beyond repair.
- 5) Doors and doorways of courtyard entrances and main entrance door ways shall retain historic motifs and engravings. If a replacement is necessary, the original doors should be matched as best possible.
- 6) "Dou" (斗) windows should not be altered or covered by any material unless it presents a danger to human life.

Wall Material

- 1) Historic materials (wood, metal, stone) and designs of walls, ceilings, floors, doors, windows, and other architectural elements should be retained as best possible.
- 2) Material should be replaced only if deteriorated beyond repair.
- 3) Damaged sections of the building should be repaired as best possible. Missing sections of the building envelope should be filled with material that matches surrounding material.
- 4) If replacement of an architectural element is necessary, the replacement should match the original as best possible in texture, size, color, and physical properties. Building façades should be reconstructed using past techniques.

Interiors

- 1) Existing floor plans and interior spaces that are important in defining the overall historic character of the building should be retained. Subdivision of primary spaces should be avoided if possible. Elsewhere, it should be considered only if it would not damage the structural system of the building. New functions such as bathrooms should be placed in secondary spaces.
- 2) Interior features and finishes important in defining the overall historic character of the building should be retained.
- 3) Stairs should be retained in their historic configuration and location. New stairs should be constructed in secondary spaces.
- 4) Painting over previously unpainted walls, ceilings or floors should be avoided.

Infrastructure/Retrofit

- 1) New infrastructure such as piping, plumbing, electrical wiring, heating should be installed inconspicuously so that they do not destroy the historic character of the building. They should be, if possible, installed in secondary spaces of the building.
- 2) The above infrastructural elements and any materials used to retrofit the building should be exposed rather than installed inside the building envelope. This will minimize impact on the building and allow for easier modification in the future.

Sources:

<http://www.nps.gov/history/hps/tps/tax/rhb/new01.htm>

<http://www.nps.gov/history/hps/TPS/briefs/brief18.htm>

Draft 30 March 2010

建筑改造导则

室内空间定义

建筑可以被划分为**主要空间**和**次要空间**。

主要空间是指那些全面定义建筑历史特性的空间，也是最为公众可见的空间。以桃坪的古老建筑为例，主要空间包括客厅和中心火灶。

次要空间是指建筑中的服务型空间，如储藏室，腌肉室，浴室，卧室活底层的牲畜圈舍。

新建部分

- 1) 新建部分应被设计为能明显展示什么是新的什么是旧的。具体形式，材料和风格不应照搬以前的样子，使新建部分看起来像是老建筑的一部分。
- 2) 新建部分应尽量少的造成历史建筑中历史材料的损失。
- 3) 室外的新建部分应置于历史建筑不太可见的部分。
- 4) 新建部分应对应原有建筑，采用合适的尺寸和规模。它不应成为建筑的主导部分。
- 5) 新建部分应该遵循新开发导则。

屋顶和半楼

- 1) 更换的屋面材料应该在材质与颜色上尽量与原有材料相一致。
- 2) 如果现有平屋顶的建筑没有半楼，应当建造一个，前提是它不会超过楼板面积的50%并且不会对建筑的历史和结构完整性造成破坏。
- 3) 过去50年中建造的半楼可扩展到楼板面积的50%。

门和窗

- 1) 现有门窗的位置和尺寸不应改变，任何的更换应当采用相同的尺寸。
- 2) 开窗率应保持不变。
- 3) 历史门窗应该尽量保留。
- 4) 只在无法修复时才替换门窗。
- 5) 庭院入口的门和门道和主要的入口应保留历史的雕刻和铭饰。如果非要替换，应尽量匹配原有的门。
- 6) 斗窗不应被其他材料替换或覆盖，除非它对人类生命构成危害。

墙体材料

- 1) 历史材料（木，金属，石材）和墙体，天花板，地板，门窗和其他建筑要素的设计应该被尽量保留。
- 2) 只在无法修复时才替换材料。
- 3) 建筑受损部分应尽全力修复。残缺的建筑围护结构应用与周围材料相一致的材料来填充。
- 4) 如果某建筑要素必须要替换，替换物应尽量在质地，尺寸，色彩和物理特性上与原有要素匹配。建筑立面应采用传统工艺重建。

室内

- 1) 现有平面布局和能够全面定义建筑历史特征的重要室内空间应该被保留。应尽可能避免对主要空间的细分，当这种改造不会对建筑的结构体系造成破坏时，方可以考虑。例如浴室之类的新功能应被置于次要空间。
- 2) 能够全面定义建筑历史特征的室内特征和构件应被保留。
- 3) 楼梯应该被保留在原有的样式和位置。新楼梯应该置于次要空间。
- 4) 应避免粉刷之前未被粉刷的墙体，天花板或地板。

基础设施/翻新

- 1) 新的基础设施，如管道，电线，供热设施应隐蔽安装，避免破坏建筑的历史特征。它们应尽可能被安装在建筑的次要空间。
- 2) 以上基础设施以及任何用于翻新建筑的材料都应暴露在外，不应安装在建筑围护结构内。这能使对建筑的影响最小化，并且使未来的改造更方便。

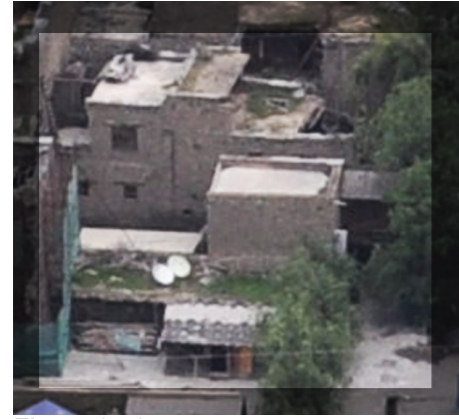
资料来源：

<http://www.nps.gov/history/hps/tps/tax/rhb/new01.htm>

<http://www.nps.gov/history/hps/TPS/briefs/brief18.htm>

2010年3月30日草稿

Addition Prototypes



Current
Available space for an addition behind a historic property

Figure 3.43



Figure 3.44

Incorrect
Addition not proportionate to the historic structure, with mismatching color/height, while blocking windows of its neighbor.

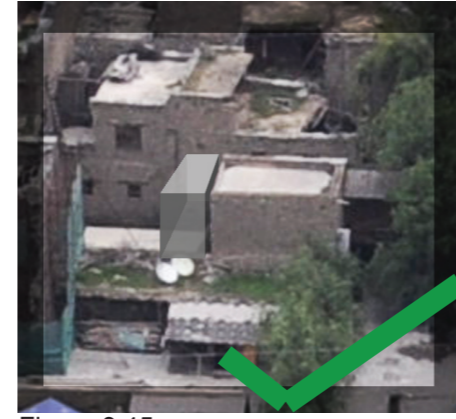


Figure 3.45

Correct
Addition blends in with surrounding and is also set back slightly from the original building, minimizing modifications to it

Half-story Roof Extension Prototypes



Current
Existing half-roof.

Figure 3.48

Wall Material Prototypes



Current
Section of building facade has been damaged by earthquake, creating a gap and missing section of the wall

Figure 3.51



Incorrect
Extension uses inappropriate material, and extends over 50% of roof area, creating an unsightly addition to the property

Figure 3.49



Incorrect
Wall has been filled in with new stone material. However it doesn't match the original, creating a discontinuity on the facade

Figure 3.52



Correct
Use of material similar to rest of building, extension does not exceed 50% of floor area.

Figure 3.50



Correct
Wall has been filled in as best as possible with material that matches the surrounding sections of the facade.

Figure 3.53

Door Example



Figure 3.46

Current: Main doorway with original size and style.



Figure 3.47

Incorrect: Doorway has been resized with mismatching infill wall materials. The door color matches the original but the style is different.

Interior Retrofit Example



Current
Example of a secondary space in a Taoping home. This is currently being used as a store room. There is greater flexibility in these types of spaces for change.

Figure 3.54

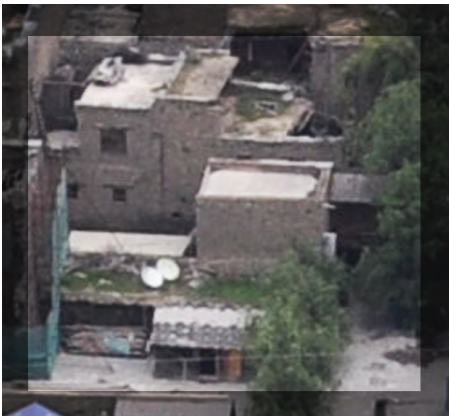


Proposal
The room could be partitioned and turned into a new modern use. One part could be turned into a modern bathroom such as this. Such a room could also be used to house modern infrastructure requires for such a use like piping

Figure 3.55

Draft 30 March 2010

新建示意



目前状况
历史建筑后的
可用空地。

图 3.43



图 3.44

错误
新建部分与原有
建筑不成比例，
色彩/高度不匹
配，且遮挡的邻
近建筑的窗户。

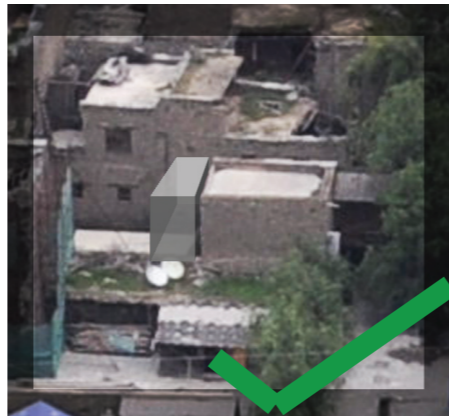


图 3.45

正确
新建部分与
周围环境相融
合，并略微
退后于原有建
筑，减少改造
的影响。

门的范例



图 3.46

目前状况：沿用原有尺寸和样
式的主入口。



图 3.47

错误：门的尺寸被改变，且使用了
不协调的墙体填充材料。门的色彩
与原来相匹配，但式样改变了。

半楼面扩建示意



目前状况
现存的半楼面

图 3.48



错误
扩建部分使用了不
合理的材料，占
去了超过50%
的屋顶面积，
这是一个视觉
上不协调的
扩建。

图 3.49



正确
使用与其他部分
相似的材料，
且不超过屋
顶面积的50%。

图 3.50

墙体材料示意



目前状况
在地震中，建筑
外墙受损，造
成了墙体的裂
缝与缺失。

图 3.51



错误
墙体被新型石
材填充，与原
有墙体不匹
配，造成立
面的不协调。

图 3.52



正确
墙体尽量用
与周围墙体
相匹配的材
料填充。

图 3.53

室内翻新范例



目前状况
桃坪一户人家
的次要空间。它
现被用作储藏
室。对于此类
空间的改造有
很大的灵活性。

图 3.54



提议

房间可以被
分割并改造
为现代使用。
一部分可以
被改造成这
样的一个现
代化洗手
间。这种房
间同样可以
安装水管一
类的现代基
础设施。

图 3.55

2010年3月30日草稿

Taoping Typology Statistics Appendix

Table 3.5

		Height in Stories	Height in Meters	Building Volume (m3)	Lot Coverage	Shared Walls	Window ratio	Average Window Spacing	Fenestration %	Door size	# surrounding households with shared walls
Old Core	Range	2-5	7.3-16.2	702.1-2018.4	65-96.3	18-55	1-1.67	1.1-3.2	1.11-16.67	2-3.4	2-10
	Average	3.4	10.7	989.5	86.57%	38.33%	1.3	2.6	9.76%	2.4	4.6
	Standard Deviation	1.0	2.6	433.8	10.95%	11.16%	0.3	1.1	5.32%	0.4	2.6
Periphery	Range	1-3	5.8-9.1	394-1926.4	68-100	0-53	1-1.21	0.45-3	5.14-42.35	1.44-6.27	0-5
	Average	2	7.9	1171.9	88.00%	23.44%	1.0	2.1	19.54%	2.5	1.8
	Standard Deviation	0.5	0.9	743.8	9.89%	24.18%	0.2	1.4	11.63%	1.5	1.6
New Village	Average	4	13.0	2912.0	100.00%	0.00%	0.7	0.9	43.50%	12.4	0
New Building	Range	1-3	5.8-10	394-1926.4	68-100	0-52	1-1.4	0.45-3	5.14-42.35	1.44-6.27	1-3
	Average	2.0	8.3	1260.1	87.2%	24.4%	1.1	2.3	18.28%	2.9	1.7
	Standard Deviation	0.6	1.3	792.9	10.5%	23.7%	0.2	1.6	13.21%	1.6	1.1
Old buildings w/ addition	Range	2-5	7.5-12.2	286.4-2018.4	85-100	0-53	1-1.18	1.1-3	9-17.3	1.44-2.8	0-5
	Average	3.0	8.7	1013.1	92.5%	28.8%	1.1	1.7	11.43%	2.4	3.7
	Standard Deviation	1.2	2.0	655.2	5.3%	19.8%	0.1	0.5	3.40%	0.4	1.5
Old Buildings	Range	2-5	7.3-16.2	702.1-1538.7	65-96.3	18-55	1-1.67	1.7-3.2	1.11-16.67	2.025-3.4	3-10
	Average	3.3	11.1	915.4	83.1%	40.2%	1.4	2.9	9.32%	2.4	5.5
	Standard Deviation	1.0	2.9	52.6	12.1%	13.4%	0.3	1.2	6.07%	0.5	2.6

		Lot Faces	Façade Faces	Longest façade ratio
Old Core	Range	4-13	4-14	1.03-2.14 : 1
	Average	8.44	8.33	1.43:1
	Standard Deviation	2.92	3.12	0.4
Periphery	Range	4-10	4-10	1.03-2.32:1
	Average	6.11	5.67	1.59:1
	Standard Deviation	2.37	2.12	0.45

Draft 30 March 2010

附录：桃坪建筑的统计资料

表 3.5

		层高	建筑高度	建筑体量 (m3)	地块覆盖率	共享外墙	开窗率	窗户平均面积	窗墙面积比	门的尺寸	分享一堵外墙的家庭数
历史核心	范围	2-5	7.3-16.2	702.1-2018.4	65-96.3	18-55	1-1.67	1.1-3.2	1.11-16.67	2-3.4	2-10
	平均值	3.4	10.7	989.5	86.57%	38.33%	1.3	2.6	9.76%	2.4	4.6
	标准方差	1.0	2.6	433.8	10.95%	11.16%	0.3	1.1	5.32%	0.4	2.6
村寨边沿	范围	1-3	5.8-9.1	394-1926.4	68-100	0-53	1-1.21	0.45-3	5.14-42.35	1.44-6.27	0-5
	平均值	2	7.9	1171.9	88.00%	23.44%	1.0	2.1	19.54%	2.5	1.8
	标准方差	0.5	0.9	743.8	9.89%	24.18%	0.2	1.4	11.63%	1.5	1.6
新村	平均值	4	13.0	2912.0	100.00%	0.00%	0.7	0.9	43.50%	12.4	0
新建建筑	范围	1-3	5.8-10	394-1926.4	68-100	0-52	1-1.4	0.45-3	5.14-42.35	1.44-6.27	1-3
	平均值	2.0	8.3	1260.1	87.2%	24.4%	1.1	2.3	18.28%	2.9	1.7
	标准方差	0.6	1.3	792.9	10.5%	23.7%	0.2	1.6	13.21%	1.6	1.1
历史建筑与加建	范围	2-5	7.5-12.2	286.4-2018.4	85-100	0-53	1-1.18	1.1-3	9-17.3	1.44-2.8	0-5
	平均值	3.0	8.7	1013.1	92.5%	28.8%	1.1	1.7	11.43%	2.4	3.7
	标准方差	1.2	2.0	655.2	5.3%	19.8%	0.1	0.5	3.40%	0.4	1.5
历史建筑	范围	2-5	7.3-16.2	702.1-1538.7	65-96.3	18-55	1-1.67	1.7-3.2	1.11-16.67	2.025-3.4	3-10
	平均值	3.3	11.1	915.4	83.1%	40.2%	1.4	2.9	9.32%	2.4	5.5
	标准方差	1.0	2.9	52.6	12.1%	13.4%	0.3	1.2	6.07%	0.5	2.6

		地块的边数	外立面的数目	立面长短边的比
历史核心	范围	4-13	4-14	1.03-2.14:1
	平均值	8.44	8.33	1.43:1
	标准方差	2.92	3.12	0.4
村寨边沿	范围	4-10	4-10	1.03-2.32:1
	平均值	6.11	5.67	1.59:1
	标准方差	2.37	2.12	0.45

2010年3月30日草稿



Building Plan Statistics

Table 3.6 Old Core

House Number	Number of Lot Faces	Number of Façade Faces	Ratio of Longest to Shortest Façade	Lot Diagram	Plan Diagram
85	8	9	1.06:1		
98	6	8	2.01:1		
101	4	4	1.28:1		
114	13	14	1.33:1		
121	9	9	2.14:1		
133	6	4	1.03:1		
143	8	8	1.54:1		
144	10	8	1.11:1		
145/146	12	11	1.37:1		
Range	4-13	4-14	1.03-2.14:1		
Average	8.44	8.33	1.43:1		
Std Dev	2.92	3.12	0.4		

Table 3.7 Periphery








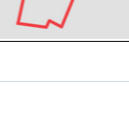
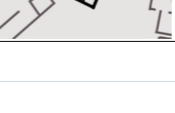
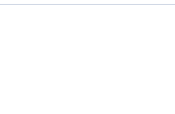


House Number	Number of Lot Faces	Number of Façade Faces	Ratio of Longest to Shortest Façade	Lot Diagram	Plan Diagram
56	4	4	1.18:1		
58	5	4	2.15:1		
60/61	6	5	2.32:1		
64	6	4	1.03:1		
72	10	10	1.35:1		
76	4	6	1.23:1		
83	4	4	1.44:1		
92	6	6	1.91:1		
131	10	8	1.66:1		
Range	4-10	4-10	1.03-2.32:1		
Average	6.11	5.67	1.59:1		
Std Dev	2.37	2.12	0.45		

Table 3.8 New Village

House Number	Number of Lot Faces	Number of Façade Faces	Ratio of Longest to Shortest Façade	Lot Diagram	Plan Diagram
270	4	4	1.14:1		

Draft 30 March 2010

建筑平面统计

表3.6 历史核心

建筑的门牌号	地块的边数	外立面的数目	立面长短边的比	地块图例	平面图例
85	8	9	1.06:1		
98	6	8	2.01:1		
101	4	4	1.28:1		
114	13	14	1.33:1		
121	9	9	2.14:1		
133	6	4	1.03:1		
143	8	8	1.54:1		
144	10	8	1.11:1		
145/146	12	11	1.37:1		
范围	4-13	4-14	1.03-2.14:1		
平均值	8.44	8.33	1.43:1		
标准方差	2.92	3.12	0.4		

表3.7 村寨边沿

建筑的门牌号	地块的边数	外立面的数目	立面长短边的比	地块图例	平面图例
56	4	4	1.18:1		
58	5	4	2.15:1		
60/61	6	5	2.32:1		
64	6	4	1.03:1		
72	10	10	1.35:1		
76	4	6	1.23:1		
83	4	4	1.44:1		
92	6	6	1.91:1		
131	10	8	1.66:1		
范围	4-10	4-10	1.03-2.32:1		
平均值	6.11	5.67	1.59:1		
标准方差	2.37	2.12	0.45		

表3.8 新村

建筑的门牌号	地块的边数	外立面的数目	立面长短边的比	地块图例	平面图例
270	4	4	1.14:1		

2010年3月30日草稿

