

Phasing for Post Earthquake Re-Housing by Jason Hutto

Damage Assessment Map

As a result of the May 12, 2008 Wenchuan Earthquake, the village of Taoping suffered catastrophic damage, rendering a significant number of homes uninhabitable and the owners displaced.

During the summer field research program a group of students performed a damage assessment survey of the Historic Village and New Tourist Village. After an examination of the interior and exterior each unit was categorized into one of four damage levels.

The majority of the units in the first two categories, Cosmetic Damage and Minor Structural Damage, are still able to be inhabited. The units in the last two categories, Major Structural and Collapsed, are severely damaged and currently uninhabitable.

Almost half of the 123 homes within the Historic Village are uninhabitable due to extreme levels of damage, displacing more than 60 families homeless. At the time of the earthquake 51 families had begun building units in the New Tourist Village. Due to the inability to rebuilt or retrofit the units, these families have lost a substantial economic investment.

Enduring the hardships of housing displacement and economic devastation has placed the residents of Taoping under a significant degree of economic, physical, and cultural stress.

Historic Village Damage Area

New Village Damage Area



Figure 2.1

Cosmetic Damage = 22 **Minor Damage = 42**

Major Structural Damage = 35 **Collapsed = 24**

Displaced Families = 61

Cosmetic Damage = 11 **Minor Damage = 27**

Major Structural Damage = 7 **Collapsed = 6**

Families Lost Investment = 51

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灾后住宅重建的阶段安排

地震建筑损毁评估分析图

在5.12大地震中，桃坪村遭受了巨大的损失，这导致了许多的家庭失去了他们的房子并且被迫迁移到其它地点。

在2009年夏天，经过实地调查，一组由中美学生、学者组成的队伍在桃坪新旧村寨进行了一次震后建筑损毁的评估研究。建筑室内外的损毁情况被分类为四个层次。

在前两类，即表皮损坏和轻微结构损坏中，建筑是可以被修复，并重新使用的。在后两类，即中度和严重结构损坏中，建筑被严重损坏并且目前不可居住。

在桃坪老村的123个家庭中，大约有半数因为房屋损毁而处于临时居所或无家可归的状态中。到地震发生时为止，有51个家庭已经开始在新旅游村中建造房屋。因为这些新建筑是不可重建或恢复的，这些家庭的所有投资都无可挽回。

这样，住宅重建的艰难和经济上的困难使得桃坪村民面对经济、物质和文化倍感压力和无奈。

历史老村的建筑损毁区域

新村的建筑损毁区域

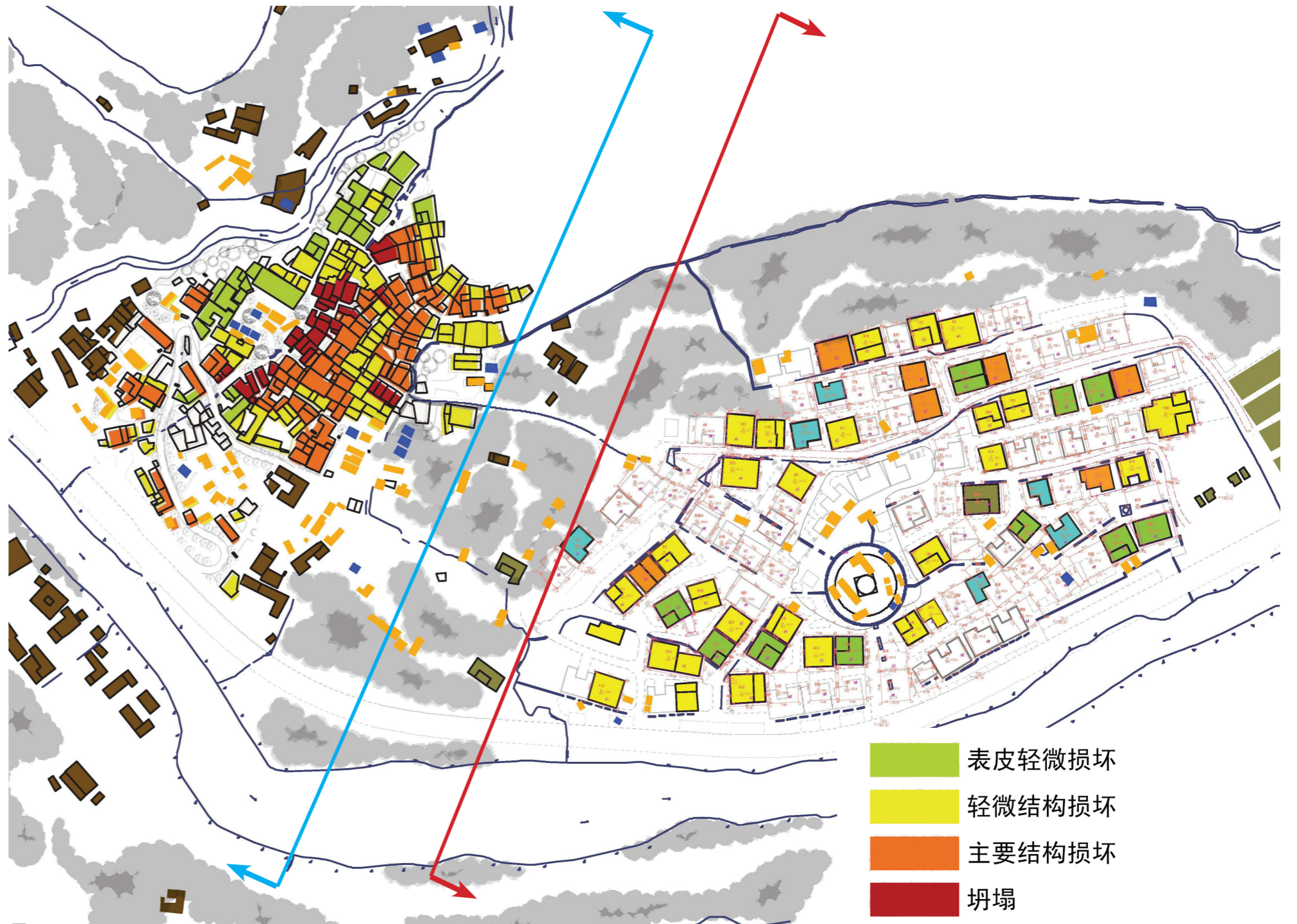


图 2.1

表皮损坏 = 22 轻微结构损坏 = 42

主要结构损坏 = 35 坍塌 = 24

被安置的住户 = 61

表皮损坏=11 轻微结构损坏= 27

主要结构损坏= 7 坍塌 = 6

损失投资的家庭= 51

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Phasing for Post Earthquake Re-Housing

Present Temporary Housing Conditions

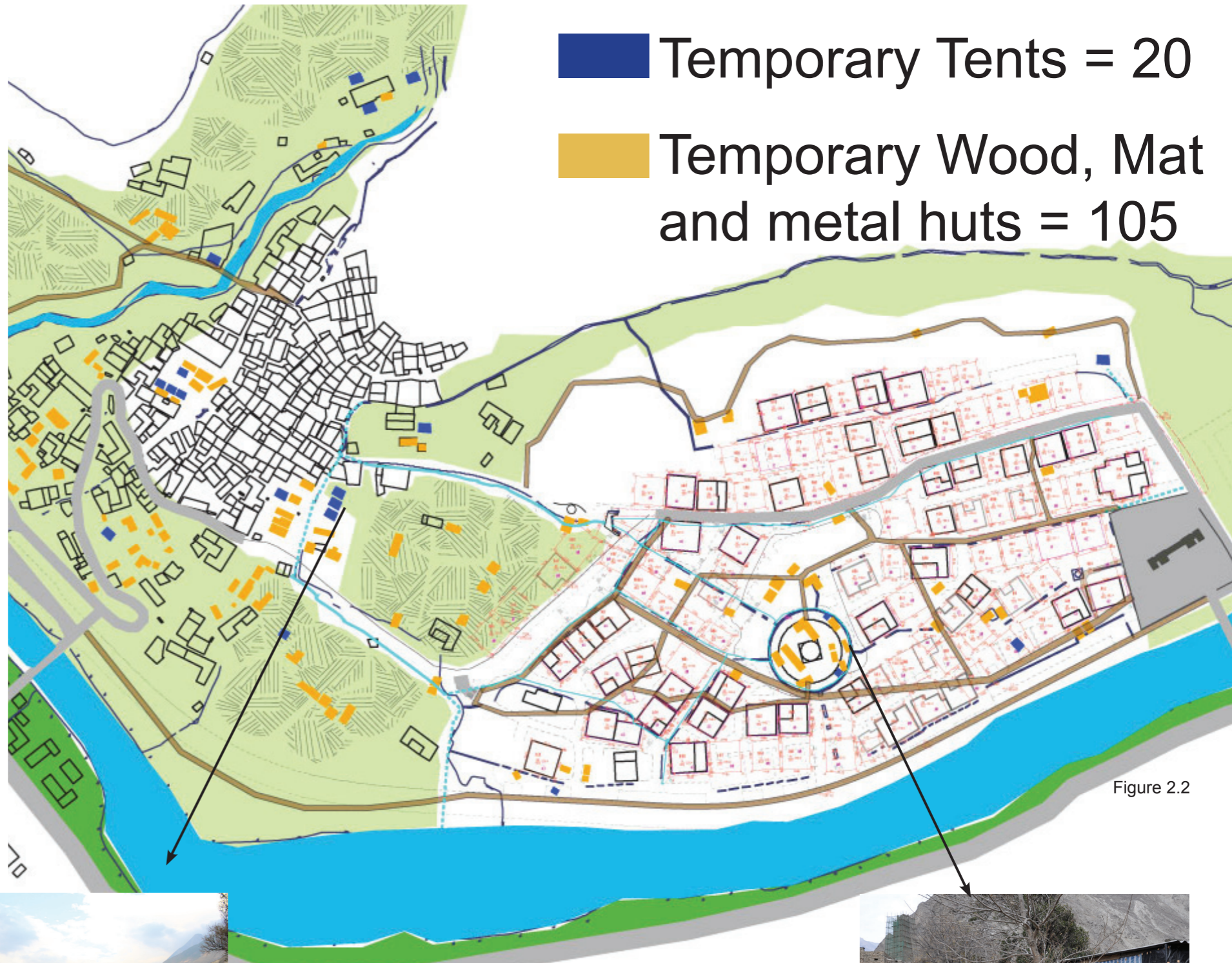
During the initial stages of recovery, more than 120 temporary structures were constructed to house villagers. Such structures are generally intended to be used for a period of no more than 6 months. After a year and a half, villagers are still forced to live in substandard temporary conditions.

Due to the tremendous degree of stress the villagers of Taoping are experiencing as a result of their displacement, we have identified the relocation of these individuals into more permanent transitional/core housing as a primary goal in developing a comprehensive village reconstruction plan.

Temporary Structures Built Area

Blue Tents 3m x 3m = 9 sq.m. x 20 = 180 s.q.m

Wood, mat and corrugated metal structures 3m x 4m = 12 sq. m. x 105 = 1,260 sq m.



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当前的临时住宅状况

在最初的恢复重建阶段，超过120座的临时建筑物（比如说帐篷）被建造以容纳村民。这些临时建筑物的使用期限是不超过6个月。但是在地震一年半之后，村民仍然居住在这些临时建筑物内。

桃坪居民正面对各种各样的压力，并且居无定所。我们将通过确定桃坪村民的重建选址来帮助他们建造可发展的永久住宅，并将这一住宅重建作为桃坪灾后重建的基本目标。

临时建造物的面积：

蓝色帐篷 $3m \times 3m = 9 \text{ 平方米} \times 20 = 180 \text{ 平方米}$

木材与防水油布的结构 $3m \times 4m = 12 \text{ 平方米} \times 105 = 1,260 \text{ 平方米}$



图 2.3



图 2.4

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Phasing for Post Earthquake Re-Housing

Old Village Occupancy Map



New Village Built Status Map

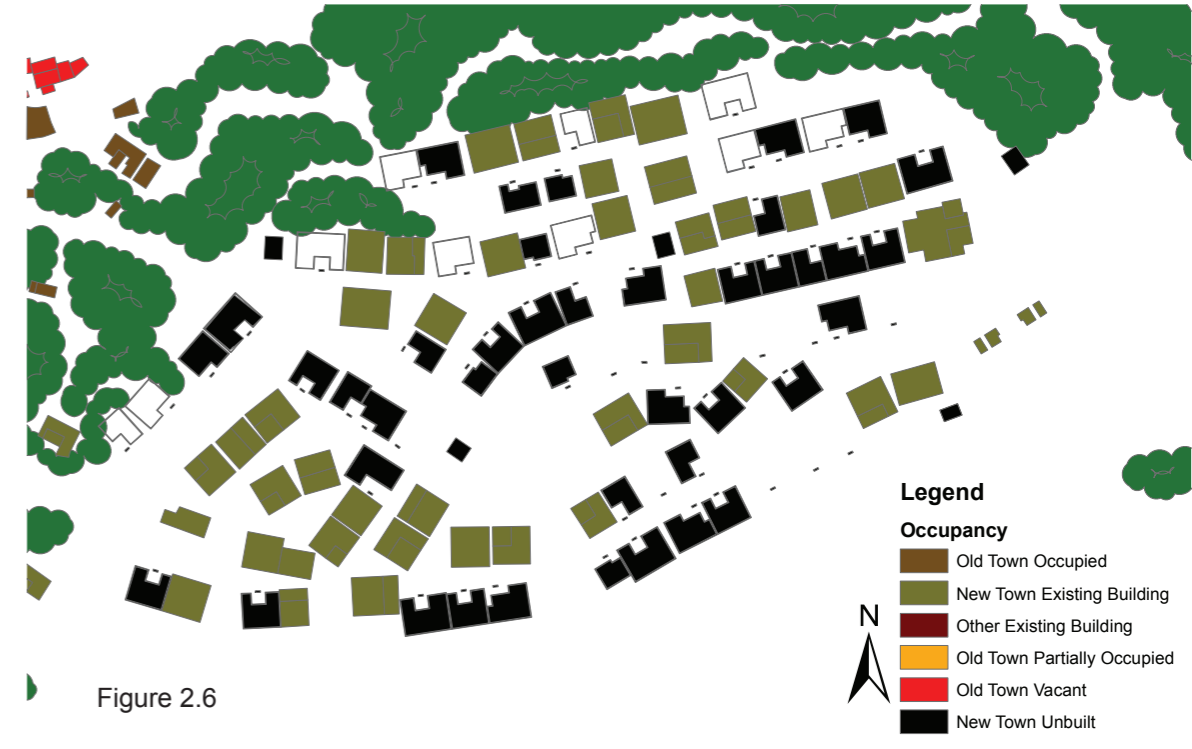


Table 2.1

Old Village Occupancy Status	New Village Built Status (All Vacant Now)					Not Built
	Built					
Vacant	4 3 6 4 8					4
Partially Occupied	4 4 15 15 4					2
Occupied	3 1 7 7 2					10
	4 4 7 3 6					6
						5

- Yu Surname
- Wang Surname
- Yang Surname
- Zhou Surname
- Chen Surname

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灾后住宅重建的阶段安排

老村建筑分布图

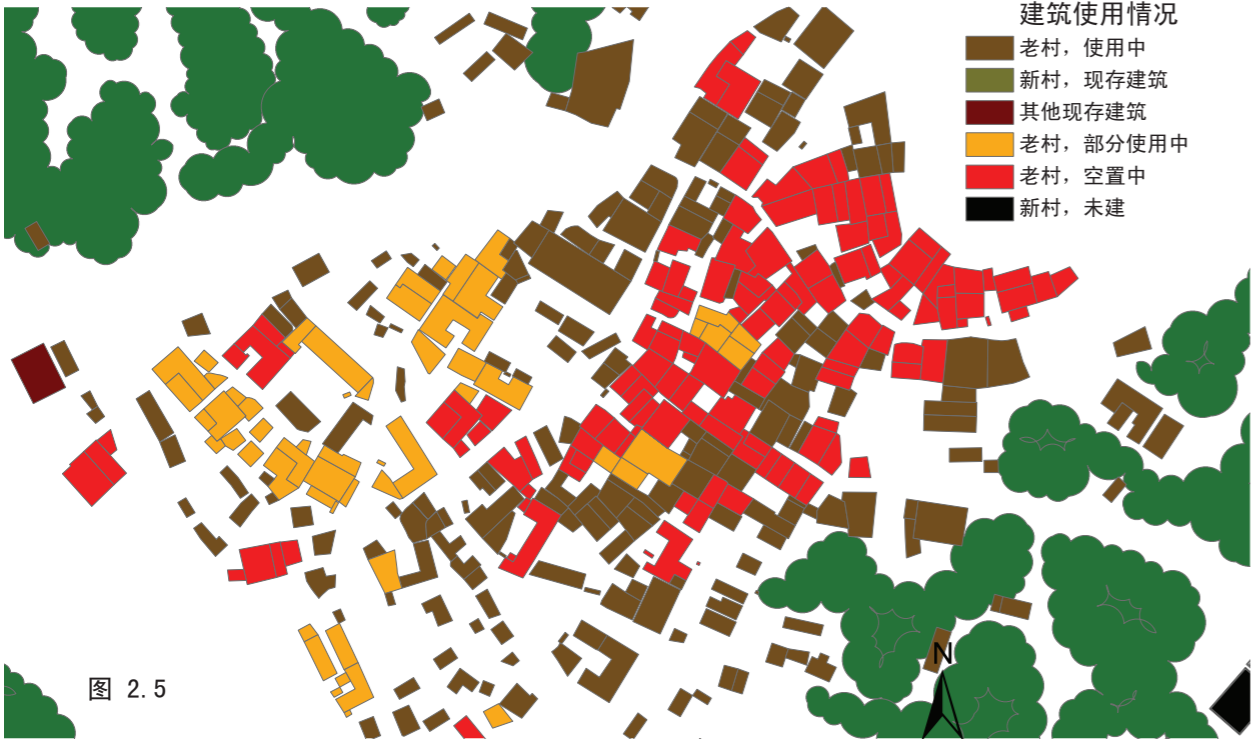


图 2.5

新村建造状况图

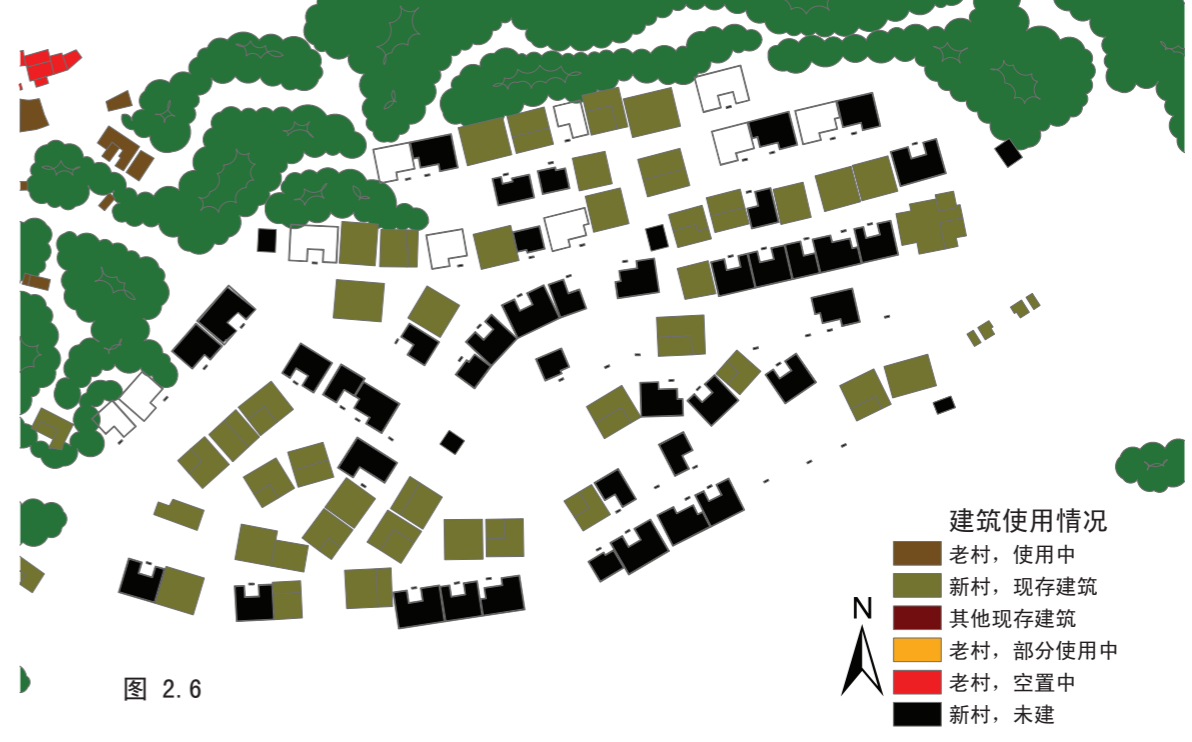


图 2.6

表 2.1

老村建筑使用情况	新村建造状况 (目前全部空置)					
	建成					未建成
空置	4 3 6 4 8					4
部分地被使用	4 4 15 15 4					2
使用中	3 1 7 7 2					10
	4 4 7 3 6					6
						5

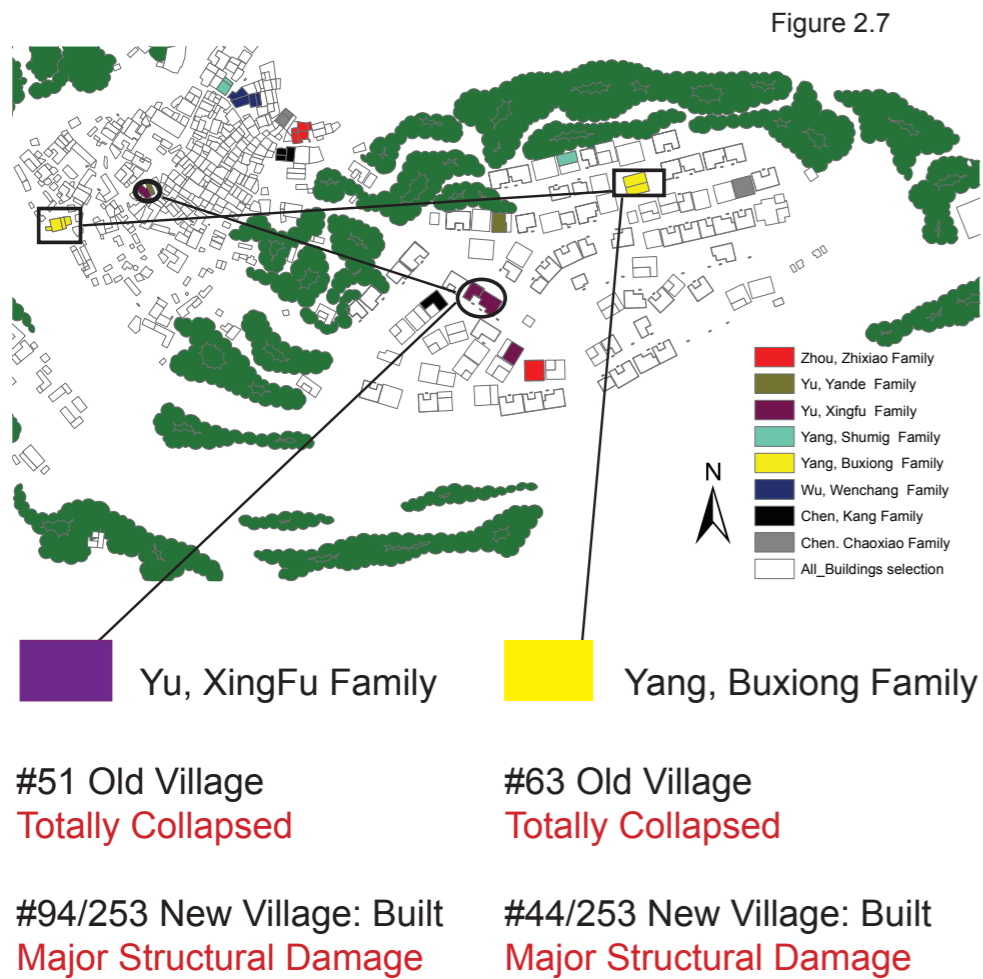
- 余
- 王
- 杨
- 周
- 陈

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Phasing for Post Earthquake Re-Housing

(Note: the use of family names below is only to illustrate this method of planning. Actual family situations would require more comprehensive surveys than this studio could conduct.)

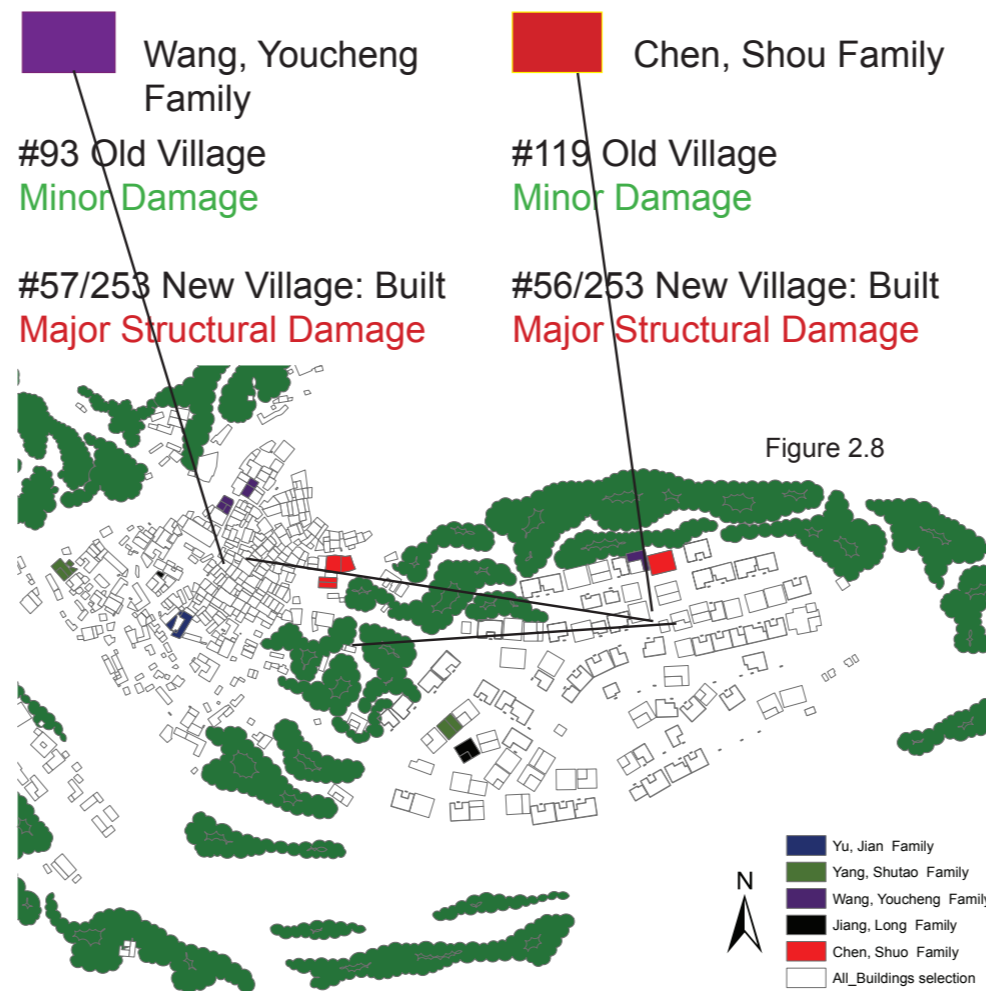
Family Relocation Situation 1st Most affected Phase 1 Priority



These are just two examples of the hardships many of the families in Taoping are facing as a result of the earthquake and subsequent housing displacement. Not only are their homes in the old village destroyed and uninhabitable, but they have each invested approximately 300,000 RMB in new village construction and may be unable to rebuilt.

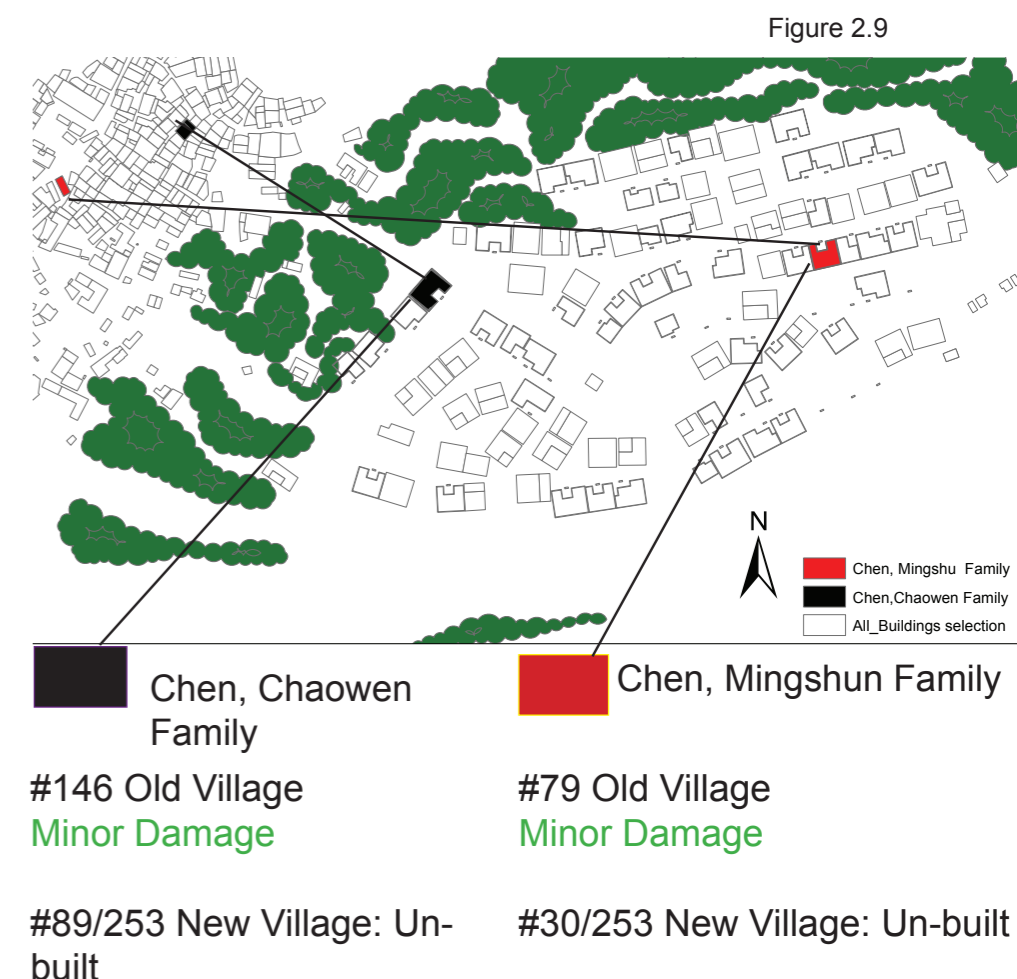
Family Relocation Situation 2nd Most affected Phase 2 Priority

These two examples are representative of the secondary level of hardship and displacement for families of Taoping. Although their homes in the old village are able to be completely or partially occupied, these families still face financial challenges for reconstruction due to the loss of the 300,000 RMB they have each invested in buildings in the new village.



These two families are representative of the least affected families. They are still able to occupy their homes the old village, only experiencing minor structural damage. Furthermore they did not build in the new village and have therefore not lost any investments.

Family Relocation Situation Least affected Phase 3 Priority



These two families are representative of the least affected families. They are still able to occupy their homes the old village, only experiencing minor structural damage. Furthermore they did not build in the new village and have therefore not lost any investments.

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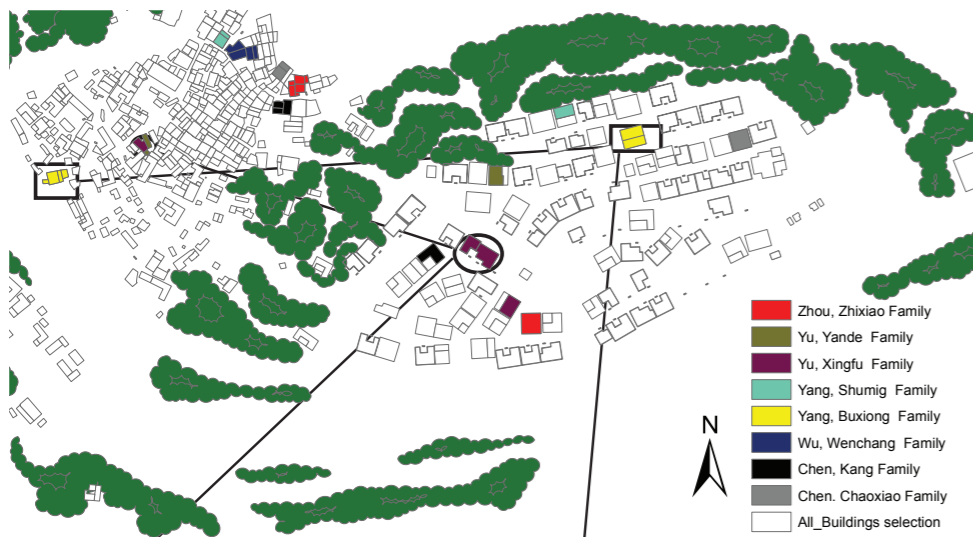
灾后住宅重建的阶段安排

(备注：以下描述的家庭名字与门牌号只是为了解释这个规划方法，而不代这几家庭的实际状况。实施规划的过程中，需要进行更全面的调查。)

家庭安置状况

第一阶段优先：最受影响的家庭

图 2.7



- 余兴福 (Yu, Xingfu Family) - #51 老村 完全的坍塌
- 杨步雄 (Yang, Buxiong Family) - #63 老村 完全的坍塌
- #94/253 新村 主要结构损坏
- #44/253 新村 主要结构损坏

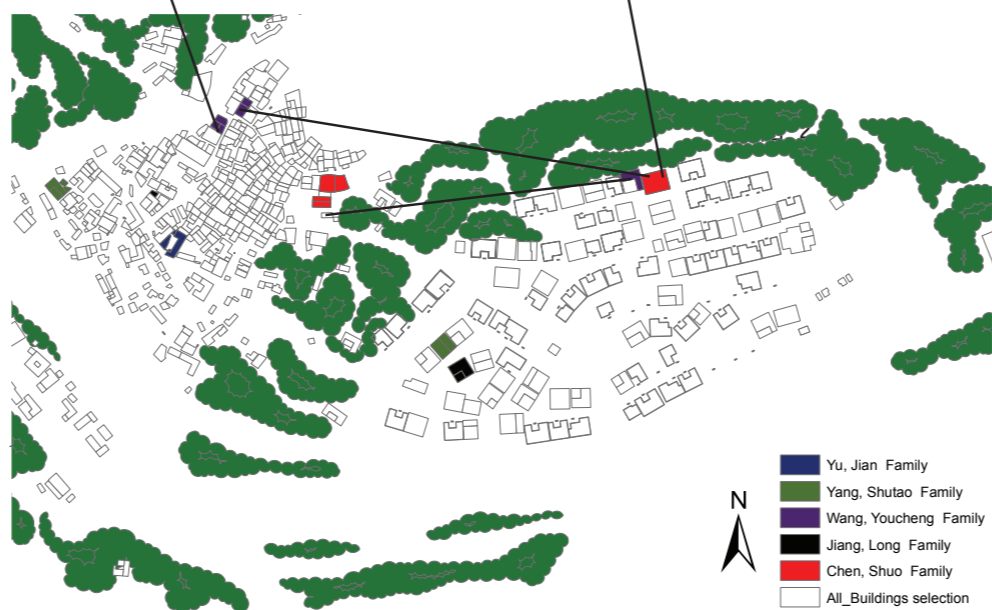
在地震之后，很多的住宅损毁了，以上两个村民的例子显明他们所面对的两个困难：一方面是他们的住宅被损毁以至于他们中的一部分没有固定的居所；另一方面是他们投资到新村中的资金也都损失殆尽。这些资金大约每户¥30万。

家庭安置状况

第二阶段优先：次受影响的家庭

以下的两个例子代表了第二阶段村民面对的困难和安置问题。虽然他们在老村中的住宅仍然可以使用，他们仍然不得不面对在地震中大量财产损失这一现实。因为他们已经在新村的投资中损失了30万元人民币

- 王友成 (Wang, Youcheng Family) - #93 老村 次要结构损坏
- 陈硕 (Chen, Shuo Family) - #119 老村 次要结构损坏
- #57/253 新村 主要结构损坏
- #56/253 新村 主要结构损坏



家庭安置状况

第三阶段优先：受影响最小的家庭

图 2.9



- 陈朝文 (Chen, Chaowen Family) - #146 老村 次要结构损坏
- 陈明顺 (Chen, Mingshu Family) - #79 老村 次要结构损坏
- #89/253 新村：未建
- #30/253 新村：未建

以上的两个家庭代表了在经济上最少受到地震损害的村民。他们在老村中的住宅只受到了轻微损害。而且他们也没有在新村中建造住宅，从而避免了经济上的巨大损失。

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Phasing for Post Earthquake Re-Housing

Core Housing Phasing Scenarios

New Village Core Housing
Construction: **Phase 1 Immediate**



Phase 1 core housing scenario was developed by determining the number of units needed for rehousing and relocating the families most affected by the earthquake.

Phase 1 is based off of calculating the number of families that are most affected and in need of housing immediately.

New Village Core Housing
Construction: **Phase 2 Intermediate**



Phase 2 core housing scenario builds off of the first phase and requires additional units to be added after the most affected families have been accommodated.

New Village Core Housing
Construction: **Phase 3 Long-term**



Phase 3 core housing scenario is the final phase of new village reconstruction, and would be developed for the least effected families. The structures constructed in this phase would be used for housing or for accommodating tourists.

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灾后住宅重建的阶段安排

核心住宅的阶段开发

新村核心住宅

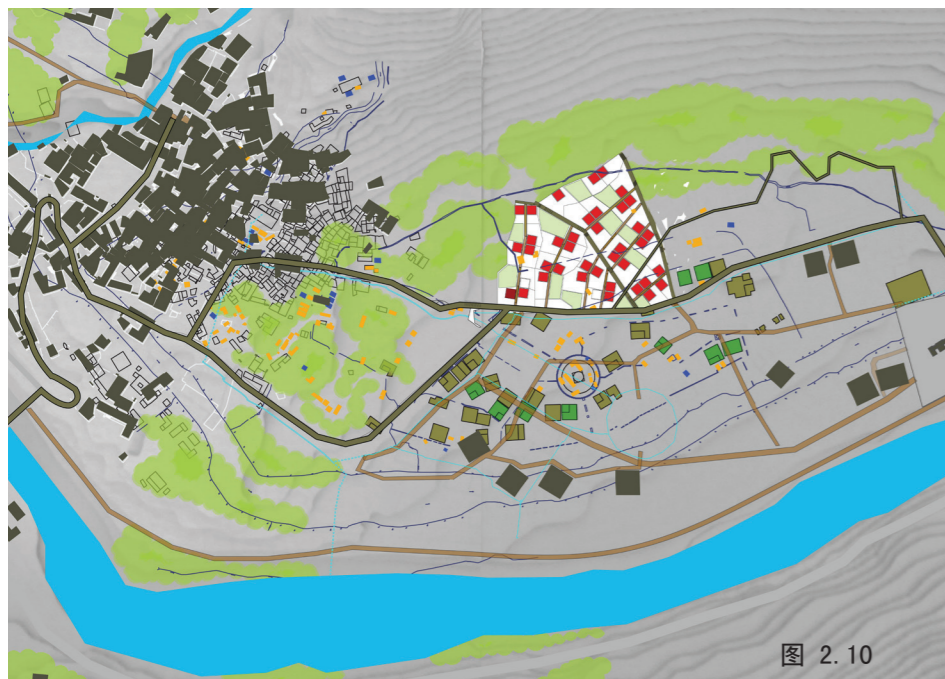
建设开发：**第一阶段 急需**

新村核心住宅

建设开发：**第二阶段 中期发展**

新村核心住宅

建设开发：**第三阶段 远期**



第一阶段 通过分析需要重新安置的家庭数，我们可知道需要立即建设的核心建筑单元的数目。

第二阶段 第一阶段的核心住房都已建成，在所有最受影响的家庭都已搬入之后，村民开始加建需要的增加核心住房。

第三阶段 最少在地震中受到影响的家庭开始在新村中建筑最后的住房。在这一阶段中建造的房屋或扩建部分将用于家庭旅馆之用。

2010年3月30日草稿

Phasing for Post Earthquake (Re)Housing & Rehabilitation

Phasing: Reflections & Implications

(Re)Housing

We are unable to identify the exact number of units that would be built in each of the three re-housing phases due to incomplete data. While identifying that any attempt to organize re-housing by using need-based methodology has the potential for creating socioeconomic segregation, our findings suggest the burden of displacement and loss of investment has effected almost all families in the village regardless of socio-economic class. It is our belief that the re-housing scenarios could serve to create a new identity for Taoping that memorializes the earthquake and its impacts through new settlement patterns and the imprint on the built environment.

Rehabilitation

The following chart (Figure 2.12) provides a timeline for implementing the various initiatives of the Taoping Rehabilitation Project (TRP) comprehensive plan. The implementation time frames for each initiative has been projected in order of the most immediate needs to long-term goals for returning and enhancing villagers quality of life. This multi-phased initiative approach strives to provide a comprehensive framework for cultural heritage conservation and endogenous sustainable development.

TRP's implementation strategy approaches preservation, rehabilitation and sustainable development in five different initiatives each composed of various sub-initiatives.

Starting with the creation of a village level oversight committee that is committed to equitable representation and community based processes of development is essential for ensuring a sustainable future for Taoping. Short term initiatives would engage the immediate needs of rehousing, water system rehabilitation and design guidelines along with other long-term initiatives such as slope protection. As the most fundamental components of recovery are satisfied, more in-depth aspects of ecological restoration, economic diversifi-

cation and cultural preservation will begin to be implemented.

We recognize none of the initiatives are one dimensional in scope or impact and should be executed over a four-dimensional scale integrating community based participatory planning, sustainable economic development, cultural conservation and ecological rehabilitation.

Taoping Rehabilitation Project Comprehensive Plan

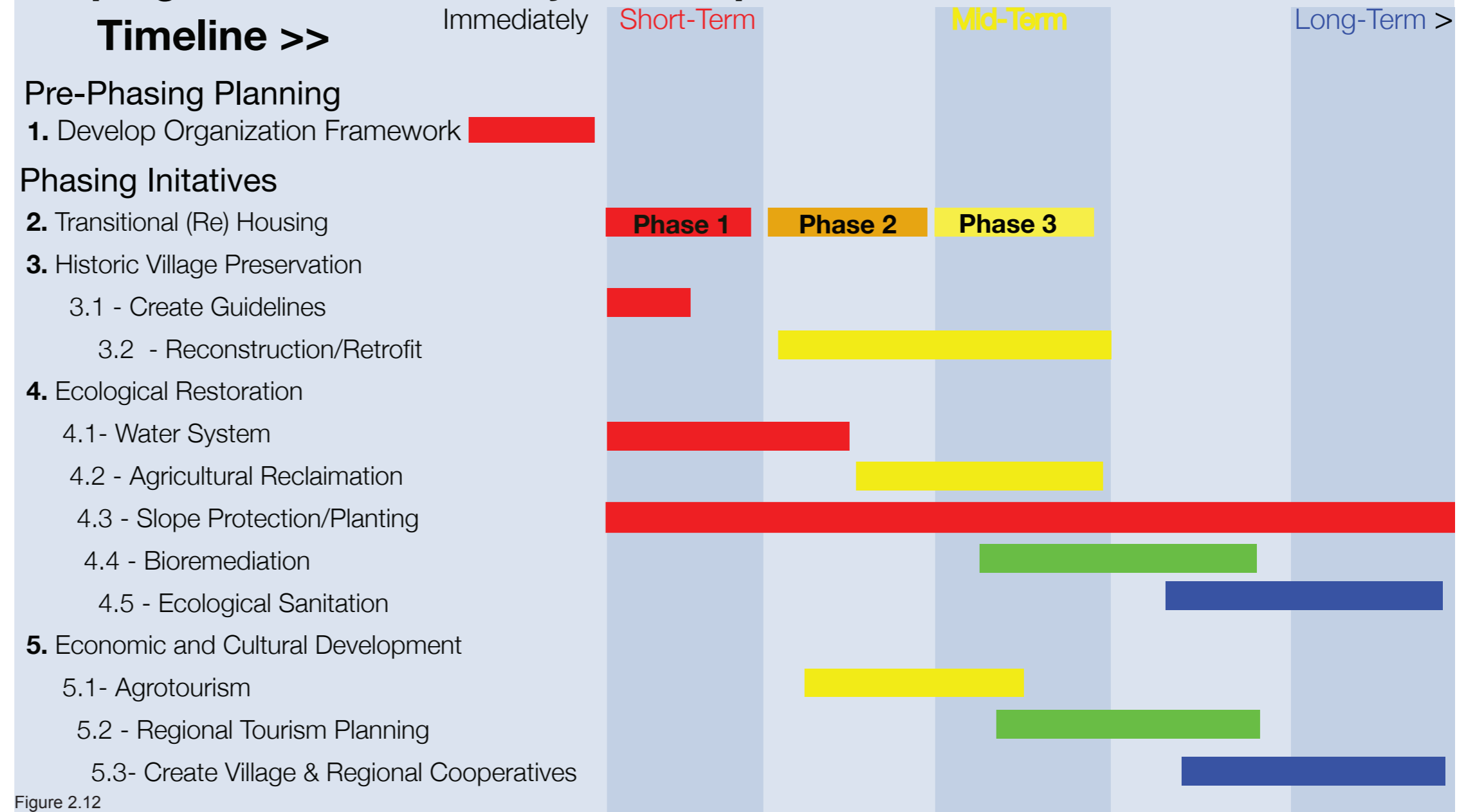


Figure 2.12

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灾后住宅重建的阶段安排

阶段性：总结与展望

因为没有足够的技术支持，我们不能确定在每个阶段的待建房屋数量。我们知道采用需求导向的方法来重建社区有可能造成社会经济上的差异。但是我们的研究成果表明居无定所与投资的损失影响到所有的居民并且与村民的社会经济地位无关。我们相信灾后住宅重建的方案可以提供给桃坪一个新的身份。新的住区与建成环境能帮助桃坪追忆这场大地震的灾害和影响。

居住重置

右图2.12是我们策划的一张桃坪重建时间表。这张时间表为各种桃坪重建项目提供了一个总体的规划。每一阶段的规划与发展都兼顾目前的急需与长远的目标，以帮助恢复和发展村民的灾后生活。这个多阶段的发展计划能够完备地保护文化遗产和支持可持续发展。这个重建时间表及规划发展计划将保护、重建和可持续发展容纳在五个不同的范围之内。每个范围还包括自身的多项关注重点。

在发展之初，我们又建立村级层次的发展委员会来保证对每个村民的公平与公正，这能够确保桃坪的可持续发展的明天。短期的发展项目能够将满足村民居有定所的急需，帮助水系统的恢复与洁净，同时目前急需编制的设计导则要与一些长期的发展目标结合起来。一个长期发展的目标的例子是山坡的维护与修复。

当基本的复原需求得到了满足，更多的更深层次的生态维护、经济发展与文化保护便能提上议事日程。

最后，我们认识并提出所有的这些发展项目都不是简单地为了一个目标。它们都有至少四个发展方向和目标。这包括参与式规划的整合社区、可持续的经济开发、文化保护和生态恢复。

桃坪灾后重建总体规划

时间表 >>

规划前期准备

1. 开发组织结构

分阶段的开发项目

2. 发展性的住宅（重建住宅）

3. 历史村落保护

- 3.1. 制定设计导则

- 3.2. 重建/修复

4. 生态修复

- 4.1 水系统

- 4.2 农业恢复

- 4.3 山坡保护/栽种

- 4.4 生态修复

- 4.5 生态环境卫生保护

5. 经济和文化开发

- 5.1 农业旅游

- 5.2 区域旅游规划

- 5.3 创造村落和区域合作协会

急需

短期

中期

长期 >

图 2.12

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