

## DESIGN AND PLANNING TYPOLOGIES

### 设计和规划类型

This final research endeavor serves as a synthesis and capstone project. In response to the feedback of the Gaoming officials, the class shifted its focus from master planning to issue-based research. The class organized into various teams to look more in-depth at particular issues of interest including water and hydrology, transportation, density and form, civic centers, and villages. Using the knowledge from the original research and site analyses, innovations from the midterm plans, and insight from officials in Gaoming, each team sought an in-depth understanding of these critical issues in the Gaoming context.

Each team structured its research around a common framework, which focused on Policy, Design, Implementation, and Case Studies. The case studies shed light on detailed options in each area and provide important lessons from successes and failures. The following section presents each teams' findings and recommendations.

最终的研究成果应是一个综合和总结性的项目。根据高明政府的反馈，工作室把研究重心由总体规划转向课题研究。工作室分为不同的小组，更深入的研究各个课题，包括水与水文、交通、密度和建筑形态、城市中心、村庄等。通过综合最初研究和实地分析的结果，中期规划的发现和高明官员的意见，每个小组对这些高明的关键课题有了更深入的认识。

每个小组的研究围绕着一个共同的框架展开，这个框架集中在政策、设计、执行和案例研究上。案例研究聚焦在每个案例详细的选择方案上，从他们的成功和失败中得出总要的经验和教训。以下将介绍各个小组的研究结果和建议。



*figure 1: canals with wastewater treatment system can be an urban organizer for the new developments*  
图 1：带有污水处理装置的都市水道可以为都市的新开发起到组织作用。

## WATER

### 水

Gaoming's location on the West River represents its defining characteristic as well as its greatest opportunity. Years of rapid economic growth throughout the Pearl River Delta are threatening the region's environmental integrity. In order to preserve this natural asset, as well as ensure the health and economic welfare of future generations, it is critical that the city work now to improve the environment. For Gaoming, the management of water pollution is a key.

This chapter addresses the value of a comprehensive water pollution strategy to manage all aspects of the problem. Additionally, this chapter offers recommendations for policy, technology, and implementation, including case studies, to assist in the development of a water pollution management strategy.

高明紧邻西河的地理位置不仅是它区别于其他地区的重要特征，也标志着巨大的机遇。珠江三角洲多年来经济持续高速增长严重威胁着这一地区的环境质量。为了保护这片自然遗产，也为了保证子孙后代健康与经济的持续发展，从现在起就开展环境保护工作至关重要。对高明来说，环境保护非常重要的一环就是水污染治理。

本章从多方面阐述水污染治理决策的价值。本章还包括实例分析在内的政策、技术和实施等方面的建议，以协助发展水污染治理的策略方案。

## 在高明规划

### 水污染减缓策略方案

#### 减少非渗水性地区面积

主要目标：提高整体水质，通过增加雨水在当地的渗透量减少对污水处理厂的依赖性。

减少非渗水性地区面积高明应该控制（如果可能的话减少）当地非渗水性地区面积。政策方案之一就是利用经济杠杆鼓励土地所有者和开发商将非渗水性地区减到最低。土地所有人可根据在其产业上的非渗水性地区（如停车场、房顶、车道）面积的总量缴纳一定数量的月费。那些实行较好雨水管理措施的业主可得到税务方面的优惠。雨水使用费用与记录已经在美国的很多城市中施行。

高明环境保护局应该监测非渗水性地区并对其进行记录，让有关部门的领导和规划者了解这方面的信息，以便决定哪里适合发展，而哪里应该控制发展。

### WATER POLLUTION IMPROVEMENT STRATEGIES

#### Reduce Impervious Areas

Primary objective: To improve overall water quality and reduce reliance in waste water treatment plants by increasing the amount of rain water infiltrated on site.

Gaoming should control, and reduce where possible, impervious areas in the city. A policy approach would utilize economic incentives to encourage property owners and developers to minimize total impervious areas. A monthly fee can be charged on the property owners, based on the measured total impervious area of their properties, such as parking area, roof, and driveway. And those owners who adopt better on-site stormwater management measures can be offered tax credits. Stormwater user fee and credits have been implemented by many United States cities.

Gaoming EPA should monitor and inventory impervious areas throughout the city so that this information is available to decision makers and planners as to where the most suitable sites for development are as well as where to curb growth.



figure 2: The Increase of impervious area in Gaoming  
图 2：在高明不断增加的非渗透性表面

### Natural Remediation

Primary objective: To reduce the cost and chemicals needed to treat polluted water and to provide further treatment to water that has been treated traditionally but is still not as clean as the water body it will be discharged into.

Although traditional bio-chemical wastewater treatment technologies still dominate city planning, natural remediation is becoming increasingly accepted throughout the world as an environmentally-sensitive and cost-effective method to treat storm water, gray water, and food industry wastewater.

Natural remediation can be wetlands, constructed wetlands, living machines, and restorers. Constructed wetlands have been used in numerous countries including Australia, Canada, China, the United Kingdom, and the United States. In 1997, natural remediation was recommended in the United State's Office of Science and Technology Policy report to Congress.

Compared to traditional wastewater treatment methods, natural remediation has the advantage of cost saving (especially, operation costs) and further treatment (good outflow quality, particularly good as a secondary treatment). Equally important, natural remediation can improve the natural landscape, provide recreational and environmental education opportunities, and create fauna and flora habitat. Admittedly, natural remediation has the disadvantage of large land requirement, which makes it difficult highly urbanized areas.

Gaoming has the opportunity to implement natural remediation throughout the city and region. A large number of swamps, fish ponds, and underdeveloped lands can be easily transformed into various types of wetlands.

*Source: Executive Office of the President, Office of Science and Technology Policy, 1997. A Report to the Congress: Science and Technology Shaping the Twent First Century; <http://clinton2.nara.gov/WH/EOP/OSTP/SNT/chapter4.html>*

### 天然方法

主要目标：减少污水处理所需要的成本以及化学试剂，而对于经过传统方法处理但还达不到排放要求的水体进行深度处理。

尽管传统的生化污水处理技术仍比较普遍，天然方法治理污水因其环境影响小、成本收益高等特点正为世界上越来越多的人所接受，其覆盖面包括雨水、灰水、食品加工产业污水等。

天然方法包括湿地、人工湿地等。人工湿地已在多个国家使用，包括澳大利亚、加拿大、中国、英国以及美国。在1997年美国科技政策办公室的报告中就将天然方法推荐给了国会。

与传统污水处理方法相比，自然方法有如下优点：节省成本（特别是运营成本）、深度处理（处理后的水质好，特别是作为二次净化使用时）。同样重要的是自然方法可以改善自然景观，提供消遣旅游的机会，创造动植物栖息地，提供环境教育机会。当然自然方法也有占地面积要求高的缺点，在高度城市化的地区较难实行。

高明有在市内和整个地区实行天然方法的可能。大量的沼泽、鱼塘和未开发用地可以很轻易地转化为各种类型的湿地。

### Building-Level Strategies

Primary objective: To minimize overall water use at the household level, capture as much stormwater as possible through roof gardens, porous surfaces, and storage tanks, and to minimize the overall environmental impacts of buildings.

It is expected that Gaoming's population will double in the coming two decades. That housing pressure, along with the corresponding growth in business and industry, will create a major construction boom in the city. Gaoming is in a good position to stop any potential problems by implementing building and construction policies that include sound water management.

Roof gardens have been used widely throughout the world and, depending on building design, can range from full-scale vegetable gardens to low-maintenance grass. In any variation, they are very effective at absorbing stormwater on site and, therefore, reducing the amount of the runoff. They are also very good at reducing the urban heat island effect, which in many cities with high degrees of impervious surfaces and little green space, can raise temperatures by several degrees, resulting in increased energy use to power fans and air conditioners and overall greater inefficiency.

There are a lot of opportunities for gray water reuse. One way to achieve this is through double plumbing, in which gray and black water are piped separately so that the gray water can be reused. Some common reuses are irrigation and toilets. Reusing water reduces the overall amount of water needed from the water treatment plant as well as reduces the amount of water then sent to the waste water treatment plant. Rain, gray and black water can also be used with constructed wetlands, Living Machines, and Restorers.

Incentives, such as green building tax credits can be introduced to encourage developers to incorporate green design into their real estate projects. Green building design guidelines and best-practices should be developed and disseminate to provide technical assistance.

### 居民住宅策略方案

主要目标：将居民用水总量减到最少，通过房顶花园、渗透性表面和蓄水池等尽可能多地利用雨水，以便降低民居对环境的影响。

据预测，高明的人口在未来20年内将翻一番。随之而来的住房压力和商业工业增长将带来一个主要的建设高潮。高明可利用这个契机，通过在房屋建筑过程中实施先进的水管理措施，避免任何将来可能发生的潜在问题。

屋顶花园的使用在世界上十分广泛。按建筑设计不同，其形式从全方位的植物园到低维护需要的草地应有尽有。不管形式如何，都是非常有效的吸收雨水、从而减少雨水流失的手段。屋顶花园也是减少城市热岛效应影响的有效手段。城市热岛效应是在城市中非渗透性区域面积过大造成的局部升温现象，造成了电扇、空调用电量的增加和整体的低效。

还有很多灰水再利用的机会。方法之一就是通过对双管道系统将灰水和黑水分离，让灰水再利用。比较普遍的利用方式包括灌溉和厕所马桶冲洗。水的再利用可以减少自来水管厂的用水需求压力，也减少了污水处理厂的处理量。雨水、灰水和黑水也可以用于人工湿地等。

可以利用绿色建筑税收优惠等刺激手段鼓励开发商在房地产项目中融入绿色设计。发展、宣传绿色建筑指导方针和最优方法以提供技术支持。



水处理：有污水修复器的水道



环境：对流



其他因素

figure 3: housing typology with diverse strategies for a sustainable Gaoming

图 3：在住宅设计中可以使用的不同可持续策略

## 在高明规划

### IMPLEMENTATION

To implement the project, we have to take in account of benefits and costs, phasing, and planning.

### BENEFITS AND COSTS ANALYSES

An initial benefit-cost analysis was conducted to compare bio-chemical treatment and constructed wetland, based on the data provided by Shenzhen Environmental Institute. To meet the treatment capacity for 250 thousand people in the new urban center (100% treatment rate and not including stormwater), traditional treatment requires 210 million RMB for infrastructure construction and 33 million RMB per year for operation and maintenance, while wetland treatment only needs 140 million RMB and 8 million RMB, respectively.

This indicates that constructed wetland is cost-effective in terms of investment and operation. Besides the cost saving, it can bring environmental benefits. For example, Gaoming would decrease its BOD discharge by 1465 tonnes if it adopted constructed wetlands. In addition, wetlands can improve landscape amenities, provide recreational opportunities, and create habitats for wildlife. It is difficult to monetize these improvements.

However, constructed wetlands need at least four times more land than bio-chemical treatment. This makes constructed wetlands especially difficult to implement in high land-value regions. Individual case studies can be done to compare the benefits and costs.

### 实施

要实施这个计划，我们要考虑收益和成本、阶段划分和规划。

### 收益和成本分析

根据深圳环境科学研究所的数据，我们进行了费用效益分析来比较生化处理和人工湿地处理两种方法。要达到新城区25万人口的处理能力（100%处理率，不包括雨水），传统的处理方法需要花费2.1亿元人民币的基础设施投资费用，再加上每年3千3百万元的运转和维护费。而湿地处理的费用只有1.4亿元和8百万元。

显然，从投资和运转上看，人工湿地是划算的。除了节约成本，人工湿地还可以带来环境效益。例如：人工湿地可以使高明每年减少1465吨的生化需氧量排放。此外，湿地还可以提高景观效益，创造娱乐休闲的机会，以及为野生生物创造生存环境。这些人工湿地所带来的价值无法衡量的。

然而，人工湿地的用地量至少是生化处理方法的4倍，在土地价值高的地段尤其难以实施。应根据个案研究来比较收益和成本。

**Table 1: Comparison of Implementation of Traditional Wastewater Treatment and Constructed Wetland in Gaoming New Urban Center** 表1：高明新城区采用传统废水处理和人工湿地处理方法的比较

	Bio-chemical Treatment 生化处理	Constructed Wetland 人工湿地
Investment (thousand RMB) 投资（千元）	210,000	140,000
Annual Operation Cost (thousand RMB) 年运转成本（千元）	33,853	8,303
Outflow Quality (BOD concentration: 出水污染物浓度（生化需氧量浓度：毫克/升） mg/l)	30	5

Note: It is assumed: 1) The total population is 250,000; 2) Per capita water consumption is 0.7 cubic meters per day; 3) 100% of wastewater is treated. The result is based on the estimate by Shenzhen Institute of Environmental Science.

\* We think the land requirement is underestimated.

注：假定：1）总人口为250,000；2）人均用水量为0.7立方米每天；3）处理废水达到100%。结果依据深圳环境科学研究所估计。

\*我们认为这个结果低估了对土地的要求。



土地用量

湿地、人工湿地、修复器、生命机器等自然处理方法的成本和复杂程度依次增加。产生的废水排放量是确定土地用量的关键。我们考虑三个不同的水处理场景，并计算了生命机器和湿地的土地用量。通过分析，我们得出高明新区处理废水和雨水的土地用量在0.6平方公里至6.8平方公里之间。

阶段

随着高明的发展，我们需要更多的湿地来处理日益增加的废水排放和雨水。1) 为保持一定的处理能力，湿地保护带将纳入规划之中，为未来湿地扩展留下空间。2) 变湿地处理为更高级的自然修复措施（例如生命机器）将提高处理能力而不增加土地用量。3) 高明应开发排污交易和污染税等经济手段，来降低控制污染的社会成本。

LAND REQUIREMENT

Natural remediation varies from wetland, constructed wetland, restorer, living machine, and others, in ascending order of the costs and complexities. The amount of wastewater generated is key to land requirement. We consider three different scenarios of water management, and calculate the land requirements for living machine and wetland. From the analyses, we derive the land requirement for treating wastewater and stormwater in Gaoming new urban center is between 0.6 square kilometers to 6.8 square kilometers.

PHASING

With the growth of Gaoming, we need more wetlands to treat increased wastewater and stormwater. 1) In order to maintain the capacity, wetland zone is incorporated into planning for future expansion of wetlands. 2) And transforming wetlands into more advanced natural remediation (e.g. living machines) can increase the treating capacity without increasing the area. 3) Gaoming should explore pollution trading, tax and other incentives to lower the social costs of pollution control.

Source: Executive Office of the President, Office of Science and Technology Policy, 1997. A Report to the Congress: Science and Technology Shaping the Twenty-First Century; <http://clinton2.nara.gov/WH/EOP/OSTP/SNT/chapter4.html>

Table 2: Land Requirement Analysis (Unit: Square Meter)  
表：土地用量分析（单位：平方米）

	RetentionTime (day) 水力停留时间 (天)	Scenario 1 场景 1	Scenario 2 场景 2	Scenario 3 场景 3
Living Machine 生命机器	3	1,024,521	787,808	598,808
Wetland 湿地	20	6,830,137	5,252,055	3,992,055

注：计算依据污水产生量和John Todd提供的水力时间的数据。表中做出几个假设：1) 湿地有效深度为0.75米；2) 考虑到降雨量不同，我们将日平均降雨量增加一倍（年降雨量和蒸发量的差别为600毫米）。在土地用量上，生命机器和湿地处理代表两种极端（最大和最小用地）的技术。实际的土地用量在上文给出的范围之内。场景1：没有雨水保持和废水再利用。场景2：雨水保持率为60%。场景3：雨水保持率为60%，废水重复利用率为30%。

Note: The calculations are based on retention time provided by John Todd and wastewater generation. Several assumptions are made to derive the results: 1) The usable depth is 0.75 meter; 2) In consideration of rainfall variation, we double the average daily stormwater (yearly difference of precipitation and evaporation of 600mm). Living machine and wetland treatment cover two extreme technologies, in terms of land requirement. The real land requirement should vary within the range. Scenario 1: without stormwater retention and wastewater reuse. Scenario 2: stormwater retention rate is 60%. Scenario 3: stormwater retention rate is 60%; and 30% of wastewater is reused.

### OPERATIONS AND MAINTENANCE

Natural remediation has its unique maintenance and operation issues, including mosquitoes, siltation, weed, and liability. Better design can minimize the maintenance and ensure the operation in the long term.

#### Siltation

Wetland loses treating capacity due to siltation. On-site detention minimizes the load of pollutants in the sources. Detention facilities in front of wetlands can increase their effectiveness and reduce sediment and litter entering the wetlands. Education campaigns with urban residents, industry, and road authorities can prevent wastes and sediment washing into stormwater systems. Dredging is necessary for long-term maintenance.

#### Weed and Mosquito control

Mosquitos associated with wetlands can potentially endanger human health by transmitting malaria and other diseases. The design should increase the depth of wetland and facilitate rapid drainage, which decrease the habitats for mosquitoes. The introduction of fish, tadpoles and other natural enemies can increase the ecological diversity and control mosquitoes. Pesticide is the last choice and can not be used in sensitive areas

(Source: <http://medent.usyd.edu.au/fact/freshwet.htm>)

The establishment and spread of weeds can decrease the ability of wetlands to perform their remediation functions. Water level management and introduction of predator animals can control weeds.

#### Safety

The design of wetlands should minimize the risk of children drowning and becoming a haven for rats, snakes, and other dangerous creatures.

### 运作和维护

自然修复方法有特殊的维护 and 运作问题，包括控制蚊虫、淤积、杂草和 risk。好的设计可以减少维护 and 保证长期运作。

#### 淤积

淤积会使湿地降低处理能力，甚至失去再建设的必要。现场截留从源头降低污染负荷。湿地前的截留设施能提高湿地处理的效率，减少沉积物和漂浮物进入湿地。对城市居民、工厂和交通管理人员的教育，能够减少废物和沉积物冲入雨水系统。要想实现长期保持，清淤也是必要的。

#### 杂草和蚊虫治理

湿地里的蚊虫会通过传播疟疾和其它疾病危害人类健康。设计应加深湿地深度，加快排水速度，以消灭蚊虫的生活环境。引进鱼类、蝌蚪和其它蚊虫的天敌可以在控制蚊虫的同时，增加湿地的生态多样性。杀虫剂是最后的选择，但不能用于敏感地区。

(来源: <http://medent.usyd.edu.au/fact/freshwet.htm>)

杂草的产生和蔓延会降低湿地的修复功能。可以用水面管理和引入食草动物来控制杂草。

#### 安全

湿地设计应将儿童溺水的危险降到最低，并避免湿地成为老鼠、蛇等危险动物的避难所。

WATER TO INFORM CITY CHARACTER



figure 4: Gaoming Today (all water shown in blue)  
Existing water bodies and fish ponds can inform future planning by forming the foundation of a water network and creating a distinct character.

图4：今日高明（所有水体以蓝色表示）  
现有的水体和鱼塘可以通过建立水系基础和本地地方特色来帮助未来的规划。



figure 5: sequence of transformation,  
from fishponds to urbanized canal  
图5：转化过程：由鱼塘到都市水道

WATER TO INFORM CITY CHARACTER



figure 6:  
Example of  
siteplan, with key  
features  
such as Bus Rapid  
Transit (BRT),  
opera house,  
environmental  
educational center  
/ recycling center,  
windmill park, and  
cultural center:

图6: 细部规划的不同要素, 例如公交快速线路、剧院、环保教育和回收中心、风车公园、文化中心等。



figure 7: cross section showing sequence of transformed city block pattern, every third canal remains for rain and gray water (proposed)

图7: 截面图描述城市街区形态的转化过程, 每隔三个水道就保留水体作雨水和污水处理之用。

## CASE STUDY ONE: THE RESTORER, CONSTRUCTED WETLANDS CANAL CLEANSING, FUZHOU, CHINA

### GENERAL CONTEXT

Fuzhou is a large city on the coast of southeast China with a population of about 1.5 million. There are 80 kilometers of open canals that transport roughly 130,000 m<sup>3</sup> wastewater per day through the city, out to the Min River and eventually to the Min Estuary, an important fishery for the Fujian province. The canals had become heavily polluted, particularly with raw sewage. City officials found that setting sewer pipes and pumping wastewater to conventional treatment plants would be prohibitively expensive. They were looking for a mechanism to treat the water in the canals themselves.

### KEY FEATURES

Restorer Technology is comprised of

- a floating platform to support planted ecosystems,
- an aeration system to maintain an aerobic aquatic ecosystem
- a walkway for operator access
- a bio-augmentation system

Cleaning the water are 100,000 plants, 10,000 koi carp, and two strains of bacteria. This is an example of a constructed wetland where natural processes are put to work in a constructed system.

This system has drastically improved the condition of the water. It is clear, does not smell and supports fish. The Restorer also improves the landscape aesthetics and appeal of the neighborhood.

专题研究之一：修复措施，人工湿地运河清理，中国福州

### 概述

福州是中国东南沿海一个有一百五十万人口的大城市，每天产生约130,000立方米废水通过80公里长的开放运河，流经福州市，流入闽江，最后到达福建省的重要渔业基地闽江口。运河被严重污染，尤其是未处理的污水。市政府发现建造排水管和将污水抽到传统的污水处理厂将非常昂贵。于是他们在寻找一种方法能在运河里处理废水。

### 重要特征

修复技术包括：

- 一个可以支持种植生态系统的浮动平台
- 一个可以维持有氧水上生态系统的通风系统
- 一个可供操作者进入的通道
- 一个生物繁殖系统

处理废水需要100,000株植物、10,000尾鲤鱼和两种细菌。这是一个自然处理方法在人工系统中应用的的人工湿地的例子。

这一系统极大的改善了水质，水变清了，不再发臭了，水里有鱼了。修复还增加了景观效益，吸引了社区居民来水边



figures 8 and 9: Fuzhou, China, before and after

图8和9：中国福州，水道修复之前和之后

## 在高明规划

### PROCESS / IMPLEMENTATION

The project has faced challenges. There was a major fire in the floating blower building. The canal was entirely drained once due to a dam failure. The system has also endured several torrential rains and tropical storms. Still, the biology appears to be thriving and treating water.

### COST-BENEFIT ANALYSIS

The Restorer costs about US\$10 per person per year compared to conventional sewage treatment at US\$80.

The chemical oxygen demand (the amount of oxygen needed to decay all organic matter in the water) has fallen from about 100 mg per liter to 40 mg per liter, indicating a high degree of treatment effectiveness.

Source: MIT Foshan Planning Studio, 2004: <http://web.mit.edu/11.952/www/en/resources/restorer.html>

### 方法/执行

这个计划也面临过一些挑战：浮动鼓风机建筑有过一场大火，一次决堤使得运河水曾经完全排干。但是这个系统还是经受了几个暴雨和热带风暴的袭击，生物开始繁殖，改善水质。

### 费用效益分析

与传统的污水处理每年每人花费80美元相比，修复计划每年每人只花费10美元。

化学需氧量（腐烂所有的水中有机物的需氧量）从100毫克每升降到40毫克每升，表明治理的高效性。

<http://web.mit.edu/11.952/www/en/resources/restorer.html>

figure 10: Fuzhou, China

图10：中国福州

## CASE STUDY TWO: TWO RIVERS AND FOUR LAKES IN GUILIN CITY, CHINA

Guilin is a famous tourism city in China. Guilin initiated the project Two Rivers and Four Lakes in 1998. It connects the inner river and lake systems to the outer large river (Li River) so that tourists and residents can navigate through the city by boats. The project engaged more than 300,000 tourists in 2004. The water network connects all the important sceneries in the city. The core principles of the project are:

- 1) Connect rivers and lakes and make water transport available (project connected the Li and Taohua Rivers with the Rong, Shan, Gui, and Mulong Lakes)
- 2) Create mountain, lake and river vistas
- 3) Remove sludge and divert wastewater economy.
- 4) Transfer clean water from Li River to lakes through covered trenches

## 专题研究之二：两江四湖，中国桂林

桂林是中国的旅游胜地，她在1998年启动两江四湖计划。将内河、湖泊系统连入外部的大河（漓江），使游人和市民可以乘船游览桂林。2004年，两江四湖计划接待了超过30万游客。水网连接桂林的所有重要景点。两江四湖的建设原则是：“连江接湖、架桥修路、清淤截污、引水入湖、显山露水、绿化美化、文化建设”

- 1) 连接江湖，形成水上交通（计划连接了漓江、桃花江、和榕湖、杉湖、桂湖、木龙湖）
- 2) 创造山、湖、江的美景
- 3) 清除河道和湖中的淤泥
- 4) 由隐蔽的沟渠将漓江水引入湖泊

figure11 : Metasequoia along the bank, Guilin  
图11: 桂林湖江边水杉

figure 12: camphor garden, Guilin  
图12: 桂林樟园

## 在高明规划

- 5) Build sidewalks bridges with varying designs along waterfront
  - 6) Green and beautify the region including the construction of ten kilometers of ecological waterfronts and parks, and planting over 5,000 trees and rare plants
  - 7) Preserve cultural sites and build the reputation as a historical & tourism city
- 5) 在水边修建各式各样的人行桥
  - 6) 绿化和美化景区：包括修建10公里长的生态水岸和公园，种植5千多株树木和珍稀植物
  - 7) 保护人文景观，打造历史和旅游名城

We can also learn from the financial mechanisms by Guilin City. During 1999-2001, Guilin spent 15 billion RMB on urban infrastructure and development projects, the government financing 1.2 billion RMB of that amount.

The government encouraged private sector participation in the projects. Projects were granted through a competitive bidding process so as to promote cost-savings. Another financing technique the government used was to sell the naming rights of bridges. The money raised was then used to help finance the projects. All in all, Guilin successfully employed market mechanisms to facilitate urban development, that benefited both the environment and the economy.

桂林的融资机制也是值得我们学习的。在1999至2001年间，桂林政府在城市基础设施和发展上只投入了12亿人民币，却拉动了150亿人民币的投资。

政府鼓励私人部门参与两江四湖计划。所有项目实行招标，以节约成本。政府还拍卖桥梁的冠名权，筹集的资金被用于项目建设。总之，桂林成功的将市场机制应用到促进城市发展当中，使环境和经济双双受益。

### CASE STUDY THREE: CONSTRUCTED WETLANDS IN MELBOURNE, AUSTRALIA

The rapid growth of south east Melbourne has led to increased runoff and deterioration in the health of urban waterways. The state government has set a target of reducing stormwater discharges of nitrogen across Melbourne into Port Phillip Bay by 500 tons by 2010. Research shows that stormwater is the major source of toxins, pathogens, litter and sediments that are discharged into the bay.

### 专题研究之三： 人工湿地，澳大利亚墨尔本

墨尔本东南地区的飞速发展导致水土流失增加和城市水体污染。州政府确立目标，到2010年，墨尔本减少径流中排放到到菲利浦港湾中的氮减少500吨。研究表明雨水是排放到港湾的毒物、病原体、垃圾和沉淀物的主要来源。



Assisted by AUS \$3.5 million funding from the Commonwealth Clean Seas Program, Melbourne Water is constructing a series of 10 wetlands within the cities of Casey, Kingston and Greater Dandenong. Innovative, water-sensitive urban design is also being employed in some housing and freeway developments.

Through a series of catchments and different types of marshes, the wetlands treat the urban water runoff and bring it to a level similar to rural runoff. The sites work as part of a sequential treatment train. Primary treatment of sediment and litter is conducted at the source through education campaigns, the installation of traps at strategic locations, detention and settling ponds, carbon filters, and constructed wetland features.

635,000 plants have been established in the wetlands to filter stormwater, create havens for native wildlife, and provide an attractive location for recreation in this otherwise urban area.

Source: Environment Australia, 2002. Introduction to Urban Stormwater Management in Australia.

Website: <http://www.deh.gov.au/coasts/publications/stormwater/>

由全国清洁海洋计划资助350万澳元，墨尔本水域正在在Casey、Kingston和大Dandenong建造一系列由10个湿地的组成自然处理系统。一些住房和高速公路发展还使用了创新的和整合水体的城市设计。

通过一系列流域和不同类型的沼泽，湿地处理城市和乡村的径流。实地工作是连续的治理链的一部分。沉积物和漂浮物首先是通过在环境教育活动，在重要地点安置滞留和沉淀池，以及人工湿地特征来实现的。

湿地种植了635,000株植物以过滤径流，为野生生物创造家园，并且为城区提供了娱乐休闲场所。

来源：澳大利亚城市雨水处理介绍。澳大利亚环境部，2002。

网站：<http://www.deh.gov.au/coasts/publications/stormwater/>

figures 13 and 14: constructed wetlands in Melbourne, Australia 图13：澳大利亚墨尔本的人工湿地

## TRANSPORTATION

### 交通

Gaoming today is in a fortunate position. Its streets are lively and full of commerce, its people enjoy a high level of mobility, and its amenities are accessible.

Gaoming is also incredibly fortunate because it has the chance to create such vitality, mobility, and accessibility in the Gaoming Central Area. Rarely does a district have an opportunity to affect transportation systems for generations to come. This chapter describes how transportation systems planning can maintain the good qualities of today's Gaoming while enhancing those of tomorrow's modern water city. To that end, this chapter is grounded in the assumption that transportation infrastructure planning has tremendous and lasting impact on the future of a place and its people. How streets are planned and how land use is coordinated with transportation now will affect the lives, economy and environmental quality in Gaoming for decades, even centuries. Therefore, this chapter considers transportation planning in the context of maximizing economic growth, preempting pollution and congestion, and maximizing the value and use of the water features in the Gaoming central area.

现在的高明是幸运的，街道生机勃勃、商业繁荣，人们喜爱频繁的流动性，生活设施便利。

高明的幸运还在于它能够在城市中心区保留这种活力、流动性和可达性。很少有地区能有机会能像这样影响几代交通系统。本章展现高明的交通系统规划如何能在保持现有水准的同时改善未来现代水城的交通状况。为此，本章假设交通基础规划对一个地区的未来和其居民有着重大而深远的影响。我们现在如何规划街道，如何协调土地利用与交通将影响高明未来几十年甚至几个世纪的生活、经济和环境质量。因此，本章讲述的交通规划考虑到最大化经济增长，防止污染和交通堵塞，最大化高明中心区水的价值和开发。

通过整合土地利用和交通规划、适应性规划、选择性规划，高明可以实现交通系统效率最大化和支出最优化。同时，还能实现其环境保护、经济发展和社会公平目标。通过案例分析和先例，本章指出象在Curitiba这样的地方，交通系统对于城市经济至关重要。在Curitiba，一个像新加坡、Portland一样的环境典范城市，在整个区域发展之前所做的交通规划直接与城市的环境质量和运输功能相联系。

建立在这些成功经验的基础之上，本章为高明交通规划提供一个建议框架。首先，概述了一些先例和高明的交通规划环境；然后，分析了一些案例以及它们对于高明的可借鉴之处。本章为高明保持甚至改善其街道和交通系统的流动性、可达性和活力提供了政策、财政、技术和执行方面的建议。旨在开始规划现在的交通要素，以实现经济价值、平衡和环境质量的最大化。

By integrating land use and transportation planning, planning for adaptability, and planning for choice, Gaoming can maximize the efficiency of its transportation system and expenditures. At the same time, it can accomplish its environmental, economic, and equity goals. Through case studies and precedents, this chapter shows that in places such as Curitiba, Brazil; Portland, Oregon; and Singapore, the transit system is critical to it the city's economy. Transportation planning in advance of development at the regional scale is directly tied to the environmental quality and transit functionality of the city.

This chapter therefore builds on these lessons to create a framework of recommendations for Gaoming. It first summarizes precedents and the transportation planning context in Gaoming. Then a number of case studies are reviewed and their application to Gaoming is considered. The chapter concludes with policy, finance, technological, and implementation recommendations for Gaoming to maintain, or even increase, the mobility, accessibility, and vitality of Gaoming's streets and transportation system. The goal is to begin planning these transportation elements today to maximize economic value, equity, and environmental quality.

## 在高明规划

figure 1: Foshan City's regional plan  
图 1：佛山地区的区域规划



figure 2: Fish ponds on the edge of the city  
图 2：城市郊区的鱼塘

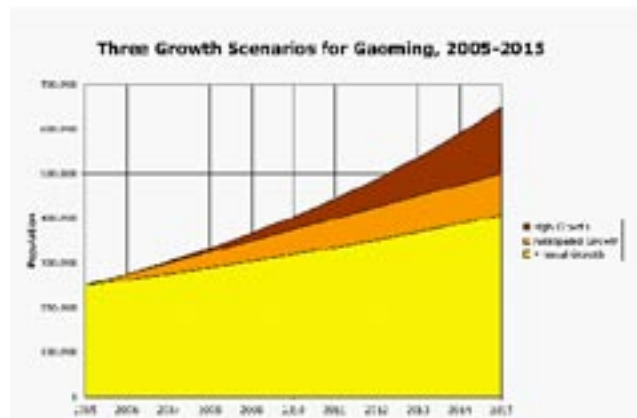


figure 3: Three growth scenarios for Gaoming  
图 3：高明成长的三种假设速度

## CONTEXT

The population and economy in Gaoming are about to boom as the district plans the new Gaoming Central Area to accommodate projected growth. Gaoming will double in population within fifteen years. Its growth will not only expand north of the downtown, but west throughout the district. Its economy will grow with industry, a new research park and local commerce. All of this will increase local income and quality of life for everyone in Gaoming.

Transportation plans for Gaoming and the City of Foshan are also well documented. A new east-west expressway is planned north of the Gaoming central area, the foshan light rail may connect to Gaoming in the future, and the district is completing construction of its waterfront walkway along the West River.

## MOTOR VEHICLE GROWTH

But consider the result of similar growth in Chinese cities in the past. In the 1980s Guangzhou also experienced explosive population and income growth. And just as income grew, so did the motor vehicle ownership rate. Having the option of driving is an excellent accomplishment where it did not exist before. But the unintended consequence of such dramatic income and vehicle growth is that residents do not have equal opportunities to choose other modes of movement, such as public transit, motorcycles, taxis or walking. People in Guangzhou have also lost the choice to live with high environmental quality. With so many vehicles, air pollution has also increased, as has congestion. The same patterns emerge in Foshan, Beijing, Los Angeles and Sao Paolo. Cities around the world are now spending billions of dollars to remedy the congestion costs, air pollution and poor health, and infrastructure investments dedicated to moving motor vehicles. Gaoming now has the choice to save these costs by minimizing the congestion and pollution altogether – without sacrificing the choice of driving. To do so, this chapter recommends planning for transportation choices (among which vehicles are one), integrating transportation plans with land use planning, and planning for adaptability.

Our recommendations expand on preexisting regional, city and district transportation planning. But the broader transportation context and local land use planning should be planned in concert and iteratively. For example, if light rail transit comes to the Gaoming central area, land use plans will have to be reconsidered. In turn, transportation plans will then have to reflect such land use change.

## 背景

高明未来的中心城区将要满足快速增长的经济和人口需求。高明人口将在未来15年内翻倍；增长将不仅限于城北，还将向城西扩张；经济将随着工业、新兴研究园和当地商业的繁荣而发展。所有的这些将提高每一个居民的收入和生活质量。

高明和佛山市有丰富的交通规划资料：高明中心区北面将建一条新的东西向的高速公路；佛山的轻轨将连接高明；沿西江的水滨大道建设即将完工。

## 机动车的发展

类似于过去中国城市发展的结果，二十世纪八十年代，广州也经历了人口激增和收入增加。随着收入的增加，机动车拥有率也不断增加。拥有机动车是以前从未有过的荣耀。但是这种收入和车辆的激增所带来的意料之外的后果是市民没有同样的机会来选择其它的交通方式，如：公共交通、摩托车、出租车或步行。广州市民也失去了高环境质量的生活。过多的车辆导致空气污染和交通堵塞。佛山、北京、洛杉矶和Sao Paolo也出现了相同的情况。如今，全世界的城市在花费数十亿美元来弥补交通堵塞、空气污染、健康下降，基础设施投资被用于减少机动车辆。高明现在可以通过减少交通堵塞和污染来减少这些开销，而不减少交通的选择。为此，本章建议规划交通选择（包括机动车），综合交通规划和土地利用规划、适应性规划。

我们的建议详细阐述了区域、城市和区的交通规划，但是大的交通环境和当地土地利用规划应相互照应。例如：如果轻轨交通进入高明中心区，我们将不得不重新考虑土地利用规划，相应的，交通规划也必须做相应的调整以反应出此土地利用变化。

### **CASE STUDY ONE: Pioneer Square, Portland, Oregon, Usa**

*“Pioneer Square is a wonderful example of what you get when you think of a transportation investment first as the means to the end of a livable community. By turning over our station budget, we helped make the square real, and got a station in Portland’s “living room.” Pioneer Square is the most important block in the state because it’s where everything comes together, it’s a symbol of our revitalized downtown, it’s the first place you take out-of-town guests, and it’s the centerpiece of our bus and rail system.”*

*—G.B.Arrington, Director, Strategic Planning for Tri-Met*

The early parallel developments of transit systems and public space can provide strong civic opportunities for a city. Pioneer Courthouse Square, located in Portland, Oregon in the United States, was developed through a partnership with the regional transportation system, the Metropolitan Area Express (MAX), and city in the 1980s. Both projects benefited from a proactive and integrated approach to their development. The transit system provided financial feasibility to the public square, as well as accessibility and convenience for many of the residents. The square offered the public a “living room” for the city as a major destination point, as well as a major transfer point for various transportation systems. The intent of the park was to create an active open space by creating social and civic opportunities within the city. The influx of people to the area spurred economic development around the square, bolstering the local economy.

The community was very active in the design and development process. A design competition was created to organize the community goals and needs. The existing relationship between the MAX and the public square provided a starting point for the designers. By developing many proposals for the site, the community could visualize the intangible needs and goals of the project. The process included numerous public presentations and community feedback sessions. Over time, a contextually and culturally sensitive project evolved, combining many community-initiated elements with a fixed transportation program. The process fostered a sense of ownership and pride in the public space, which resulted in an sustainable and active focal point for the city. Required elements of the transportation system have been carefully incorporated into the public plaza. The light rail

专题研究之一：先锋广场，  
美国俄勒冈州波特兰市

“先锋广场是一个绝好的例子，它是你想先以交通投资为手段而建造的一个适宜居住的社区。在充分利用预算的情况，我们使这个广场成为现实，在波特兰的“客厅”建起一个车站。先锋广场是俄勒冈州最重要的街区，因为所有的活动都汇集在这里。它是我们重生的市区的象征，是你带外来游客第一个游览的地方，是公交车和火车系统的中心。”

*—G.B.Arrington, Tri-Met战略规划主管*

早期平行发展的交通系统和公共空间可以为城市提供许多市民活动的机会。在二十世纪八十年代，位于俄勒冈州波特兰市的先锋广场从与地区交通系统、大都市快速交通（MAX）和城市的合伙关系发展而来。这两个计划从预先统一的发展步骤中受益。交通系统不仅为公共空间提供财政上的可行性，还为众多居民提供可达性和便利。广场作为一个主要的目的地，为城市提供了公共“客厅”，也同样是各种交通系统的主要转换点。公园的目的是通过在城里创造社交和市民活动的机会，来创建一个活跃的开放空间。涌向这里的人流带动了广场周围经济的发展，支撑着当地经济。

社区在设计和发展进程上显得非常活跃。他们还进行了一场设计比赛来安排社区目标和需要。大都市快速交通和公共空间之间现存的关系是设计师们的出发点。通过陈述许多设计方案，社区可以设想此项目的无形需要和目标。过程包括无数的公开汇报和社区反馈会议。渐渐的，一个前后相承，文化敏感的项目形成了。它将许多来自于社区的元素和固定的交通项目相结合。这个过程培养了人们对公共空间的一种拥有感

figures 4,5 and 6: Pioneer Square  
图 4, 5, 6: 先锋广场

和自豪感，其结果是出现一个持续的积极的城市焦点。必要的交通系统要素被仔细的融入到公共广场中去。有着可以保护乘车人不受恶劣天气干扰的玻璃天顶的轻轨车站就是广场上一个显著的建筑。在公共空间的隐蔽处还规划了其它的服务设施，如办公室、卫生间和问讯处。

通过在开发的初期提供公众参与，高明可以着手将复杂的城市交通系统和当地文化、社区目标结合在一起。活跃的开放空间与地区交通节点（公交快速交通或轻轨）的结合符合大佛山地区节点经济的目标，也会提升城市品质。

station maintains a prominent presence on the square with a glass canopy to protect riders from inclement weather. Other services, such as management offices, restrooms, and information centers, were planned to mesh seamlessly with the public space.

By providing a participatory process in the initial stages of development, Gaoming can begin weaving together the complex systems of urban circulation with the local culture and goals of the community. Active open spaces incorporated with regional transit nodes (BRT or light rail) coincide with the larger regional nodal economic goals of Metropolitan Foshan and can enhance the quality of the city.

Source: Transit Cooperative Research Board. TCRP Report 22: *The Role of Transit in Creating Livable Metropolitan Communities*. New York: Project for Public Spaces, 1997.

figure 7: Designated bus lane, Curitiba

### CASE STUDY TWO: Curitiba, Brazil

In the past forty years, Curitiba has emerged as a leader in integrated transportation and land use planning. Curitiba is 431 square miles. In 1965, the city had a population of 400,000; by 1995, it had grown to over 1.6 million. During the 1970s and 1980s, Curitiba's population growth reached 4% annually. Because national policy favored large infrastructure projects, the policies and planning in Curitiba represent bold innovations.

#### Financing

The infrastructure projects in Curitiba are low-cost, non-rail interventions, because the municipal government did not have access to additional finance sources for massive public transportation infrastructure. Buses can be implemented quickly, which allowed for political support through quick successes. A surface system is organic and can be built incrementally to keep pace with population growth and other changing needs of a dynamic city. Buses are privately run. The city pays companies based on distances, which supports geographic expansion through market mechanisms. The system is also self-financing, which avoids the heavy public-transportation subsidies.

#### Planning Process

The mayor of Curitiba, Jaime Lerner, exhibited tremendous leadership, insisting on small incremental steps which would yield low-cost successes to gain political support for the project. Lerner is now the governor of the state in which Curitiba lies

### CASE STUDY TWO: Curitiba, Brazil

#### 专题研究之二：Curitiba，巴西

在过去的40年，Curitiba成为综合交通和土地利用规划的先导者。Curitiba方圆431平方英里，1965年时只有人口40万，到1995年已经达到160万。在二十世纪七、八十年代，Curitiba的人口以每年4%的速度增长。由于国家政策对大型基础设施项目有利，Curitiba的政策和规划表现出大胆的革新。

**融资** 在Curitiba，基础设施项目是低成本、没有过多干涉的项目，因为市政府没有其它可供大型公共交通基础设施建设的资金来源。公共汽车可以在政治支持下很快成功通车。表面系统是有组织的，可以逐步建设以适应人口增长和一个生机勃勃的城市的其它变化需要。公共汽车由私人运营，而市民按距离付钱给运输公司，这就在市场机制上支持地理扩张。此外，系统可以自给自足，从而避免繁重的公共交通补贴。

**规划过程** Jaime Lerner市长显示出了卓越的领导才能。为了争取政治上的支持，他坚持缩小发展步伐，以实现低成本成功。Lerner现在是Curitiba所在州的州长了，他为当今这座世界名城留下一份令人难忘的遗产。



## 方针 / 理念

Curitiba在创新、高效的交通系统中建立起城市的声望和特点。规划包括交通基础设施和发展方针，以防止泛滥和建造过多的城市开放空间。

应对快速城市发展所带来的挑战的指导原则是：

- 道路沿直线型通道或轴线发展
- 将交通投资和土地利用规章作为指导发展的最有力的手段
- 规划考虑到人的流动性而不是车

Curitiba完整的公交车网络是一个由不同运载能力的线路组成的：大容量的公交车占用专用车道，限站停靠的公交车占用单行道，环形线路连接各个公交车道，100条支线公交车行驶在密度低的地区，20个交通中转站方便持单票的人转车。

## 分区和设计

市中心是为行人和公共交通设计的，汽车只在第二位。交通线路就像是城市的脊梁，将城市设计与发展的要素有机的组合起来。

市政府官员将区域法作为引导交通轴线沿线混和用途发展的工具。轴线沿线的定向发展将有助于交通和土地的可持续发展。

土地利用和道路交通总是相辅相成的，从繁忙的交通中受益的土地使用一般位于交通要道旁。发展高密度的住宅区会缓解密集的混和用途发展和人口低密度之间的矛盾。这一策略也有助于控制土地投机买卖，因为开发商清楚的知道他们在什么地点可以建什么样的房子。Curitiba利用密度奖励来鼓励更多的

and has left an impressive legacy of this now world-renowned city.

## Policy / Concept

Curitiba has built its reputation and character around an innovative and efficient transportation system. The plan included transportation infrastructure and development policies that protected areas from flooding, creating more open space throughout the city.

The set of guiding principles to deal with the challenges of the rapidly developing downtown are:

- channeling growth along linear corridors or axes;
- utilizing transportation investment and land use regulation as the most powerful tools to direct growth; and
- planning for mobility of people, not cars.

Curitiba's integrated bus network includes a hierarchy of capacity lanes: high-capacity buses on dedicated ways, limited-stop high speed buses on one-way, orbital routes that interconnect busways, 100 feeder lines between low-density neighborhoods, and 20 intermodal stations for transfers with a single fare.

## Zoning and Design

The urban core is designed for pedestrians and transit, with automobiles relegated to second-tier status. Transit lines serve as the spine of the city and become the organizing element in city design and development.

City officials employed zoning laws as a tool to direct mixed use development along the transit axes. The directed development along linear axes promoted sustainable transportation and land development.

Land uses and roadways are always compatible. The land uses that benefit from busy traffic are located along major transit corridors. Higher density residential development buffers this high-density, mixed-use development from lower density

## 在精明规划

residential. This strategy also helps keep land speculation in check, as developers know exactly what they can build and where. Curitiba employs density bonuses to inspire more concentrated development.

### Management and Organization

- Municipal agency oversees day to day operations, fares, management of private companies.
- Long term planning happens through a municipal planning agency.
- Ten private companies operate specified routes.

### Implementation / Phasing

The implementation of this project depended heavily on the vision and decisions of Mayor Jaime Lerner. Lerner's strategy was to implement quick and successful efforts to gain support and political legitimacy.

### Results / Data

The following are some key pieces of data about the bus system in Curitiba and its successes:

- One quarter of population uses public transportation
- More than one million passengers each weekday
- 75% of all commuters
- 110 passengers/vehicle
- In 1995: 222,200 trips per weekday; 6 passengers per km/day or 1300 passengers per bus per day
- Per capita fuel consumption is 25% lower than in comparable Brazilian cities
- Traffic congestion lowest in Brazil
- Urban air pollution lowest in Brazil
- Stimulates economic activity
- Buses leased to private entities so they can compete

集中开发。

### 管理和组织

- 市政府机构监视每日的运营、收费以及私营公司的管理
- 通过市政府规划部门来实现长远规划
- 十家私营公司经营指定的路线

### 执行 / 阶段性

项目的执行在很大程度上取决于 Jaime Lerner 市长的远见和决策。Lerner 市长的策略是实现迅速而成功的成绩，以获取支持和政治上的合法性。

### 结果 / 数据

以下是关于 Curitiba 公共交通系统及其成就的一些重要数据

- 四分之一的人口使用公共交通
- 工作日每天运送乘客超过一百万人次
- 人数达到所有通勤者的75%
- 110位乘客/车
- 1995年：工作日每天有222,200次往返，每天每公里有6位乘客，或是每辆公交车每天运送1300位乘客
- 人均耗油量比相同规模的巴西城市低25%
- 交通堵塞在巴西最低
- 城市空气污染在巴西最低
- 刺激经济活力
- 公交车出租给私人运营，引入竞争
- 市民按距离付钱给运输公司
- 通过市场机制支持地理扩张

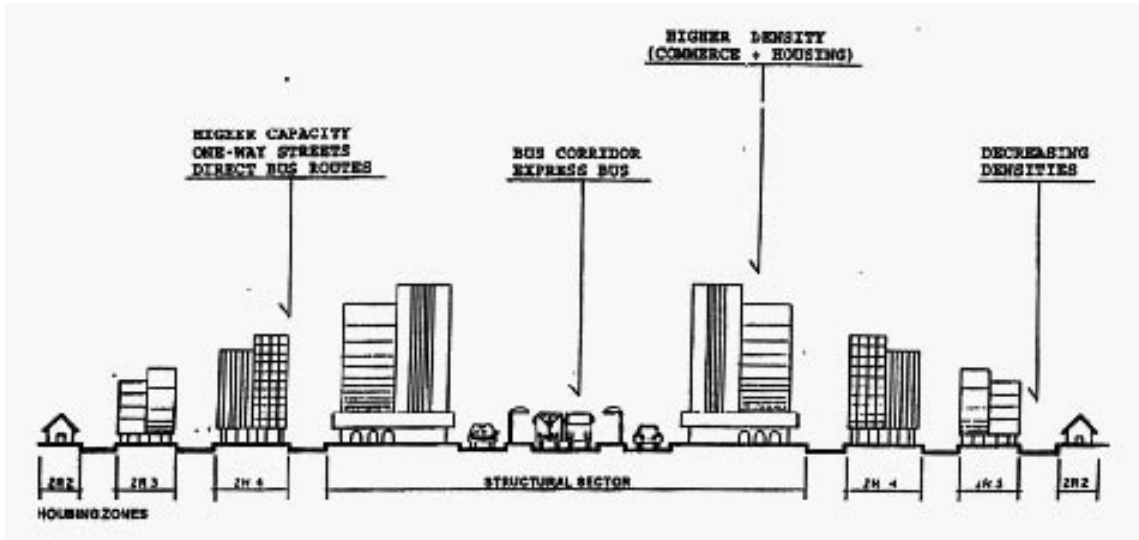


figure 8: Multi-modal cross section  
图 8：不同的交通模式的截面图

figure 9: Pedestrians in Curitiba  
图 9：Curitiba街上的行人

figure 10: BRT in Curitiba  
图 10：Curitiba的快速公交运输系统

figure 11: Curitiba Plan  
图 11：Curitiba规划图

### CASE STUDY THREE: Tampines, Singapore

The new towns surrounding the central area of Singapore can bring many relevant planning precedents to the urban development of the new Gaoming civic and residential areas.

Developed in 1980, Tampines is one of twenty-two new towns to be planned around the country. The new towns are organized around public transit nodes, created to decentralize the downtowns. The Foshan masterplan similarly anticipates this type of development with the creation of their nodal masterplan. The intention on this case study is to demonstrate how mixing of civic and commercial uses around the major transit stops can create self-sustaining cities with commercial, residential, and recreational activities. The local transportation system consists of a series of local buses that converge at the central subway station.

Singapore's planners have developed transportation policies for incremental long term development, allowing systemic flexibility for community feedback. The projects were developed to grow and adapt to the changing needs of the city and its growing population.

The Singapore government was also proactive in regulating automobile usage through "command-control" type policies, while developing a sophisticated public transportation system (buses, heavy-rail transit (HRT)). The physical developments centered on the various transit stops and nodes throughout the island. Anticipating China's (and specifically the PRD's) increase in automobile usage, the pro-active approach to limiting cars and promoting public transportation should be introduced early to help form cultural patterns of travel.

Proactive development around the transportation nodes has cultivated a community reliant on public transportation. By encouraging local enterprises and retail around the transit stops, the town center has developed into a mature 'downtown.' The implementation of various programs eased some of the pressures from the center city and strengthened its own regional identity. The planners' "forward thinking" built flexibility and change into their plans to actively face the changes of the future.

### 专题研究之三：新加坡Tampines

开发于1980年，Tampines是22个围绕着新加坡的新城之一。规划将新城建设在公共交通节点周围，目的是分散市区密度。从佛山各节点的总体规划可以看出，佛山市总体规划也是期望类似的发展模式。这一案例分析的意图在于说明在主要交通枢纽周围的商住混和用途如何能建造商业、住宅、休闲娱乐兼有的，自给自足的城市。当地交通系统由一系列汇集在中心地铁站的公交车组成。

新加坡的规划师们为不断增加的长远发展逐渐形成一套交通方案：系统的灵活性将允许社会反馈。项目的发展将会适应城市和人口增长的不断变化的需要。

新加坡政府一边运用“控制—命令”型政策预先规定汽车使用，一边发展高度发达的公共交通系统（公交车、重轨交通）。物质开发集中在岛上各种交通枢纽和节点周围。预见到中国，尤其是珠江三角洲汽车使用的增长，就应尽早想办法预先控制车辆增长和鼓励公共交通以形成旅游的文化模式。

交通节点周围的预先开发已经使人们习惯于依靠公共交通。通过辅助交通枢纽附近的当地企业和零售业，城镇的中心真正发展成为一个成熟的“市中心”。发展不同的项目减轻了一些城市中心的压力，强化了城市的地方特色。规划师们的“超前意识”使得规划具有灵活性并且可以不断修改他们的规划以积极面对未来的变化。

figure 12: Singapore Concept Plan 2001

图 1 1：新加坡2001概念规划图

### 成功原因

- 政治决心：及早发现问题，能够采取预防措施
- 最初的进展让政府能够对真正的问题未雨绸缪，而不仅仅是构思作出反应
- 人民支持政府的建议
- 关于规章，政府作出迅速而深思熟虑的决策
- 经济和社会规章证明政府是从长远考虑交通发展方案
- 解决方案多维空间化，例如：如果道路右侧在为巴士快速交通做改造，则备用道路作出相应开发以弥补修路带来的损失
- 物质设计上考虑到灵活性以适应人口变化和协调

### REASONS FOR SUCCESS

- Political will: the issue was identified early enough to take preventive action.
- The initial process allowed the government to react to real problems, not just speculation.
- The government proposed policies supported by the population.
- The government made quick and thoughtful decisions regarding the regulations.
- Transportation policies developed with long term goals in mind. This is demonstrated with economic and social regulations.
- The solutions offered were multi-dimensional. For example, if a right of way were retrofitted for a BRT line, then alternative roadways were also developed in tandem to compensate for the loss of roadway.
- The city allowed for flexibility in the physical design to adjust for changing demographics and for fine tuning.

figure 13: Tampines Plan 图 13: Tampines规划图

### CONTEXT

Singapore's planners utilize the term "Forward Planning" to describe a proactive planning process, integrating community feedback throughout the various stages of a project's development. Recognizing potential issues related to population growth in the 1960s, Singapore developed a master plan that focused on the decentralization of the downtown core. A series of new towns were developed to control the growth throughout the city-state. The program targeted sustainable development with semi-autonomous towns that still relied on the main downtown core. By 1971, a master plan was created with the help from the United Nations to control the congestion and growth of the city.

Tampines began construction in 1980 and was completed a decade later.

### 背景

新加坡的规划师们用“超前规划”来形容一个预先的规划举措，那就是在项目发展的各个阶段考虑到社会反馈。在二十世纪六十年代就认识到人口增长带来的潜在问题，新加坡将总体规划的重心放在分散市中心的密度上。一系列新城的开发被用于控制这个城市国家的发展。规划的目的在于在建设可持续发展且仍依靠主要市中心的半自治城镇。到1971年，在联合国的帮助下，一个旨在控制交通堵塞和城市发展的总体规划形成了。

Tampines于1980年开始建设，十年后真正完成。

## 政策

## 机动车拥有规定

- 用财政手段控制汽车的拥有量。在1968年6月，公开市场上进口税由10%增加到30%；到1972年10月，增加到45%。此外，各种费用和税收被用来抑制汽车购买。截止1974年1月，税收由车辆价值的25%提高到55%。在六十年代市区的发展中，盖起了高楼。这一发展增加了市区的人口和汽车数量。
- 建议错开工作时间和搭伴车来减轻交通拥挤。
- 为尽力缓解中心商业区的交通拥挤，仅限特许车辆和搭伴车通过。有了来往于停车场和中心商业区的班车，城市外围的停车场随之增加。
- 高额的停车费使开车更加不便。采用了累进制的计价表。
- 到1990年，一种新的竞价系统被用于限制汽车拥有。这次，这个系统很好的适用于各种车辆：小车、大车、周末车。每种车辆都有一定的限额，但是这个计划并不受欢迎，政府多次调整需要和花费。
- 为鼓励中心区外的汽车拥有率，政府则向车主们提供折扣。原先的周末汽车计划变成了非高峰时期计划。
- 通过征收包括道路使用的其它税来负担维护费用。

## POLICY

## Vehicle Ownership Policies

- Fiscal measures were taken to limit automobile ownership. Import duty was increased from 10% to 30% of the open market value in June 1968. The amount was increased to 45% in October 1972. In addition, various fees and taxes were imposed to inhibit car purchases. By January 1974, taxes were raised from 25% of the value to 55%. With the development of the downtown areas in the 1960s, taller buildings were being developed. This development increased both the number of people in the area and the number of cars brought into downtown.
- The government encouraged staggered work hours and car pools to ease congestion.
- In an effort to decrease congestion in the central business district, the area was restricted to licenses and car pooling vehicles. Outside car-parks were developed with shuttles running from lots to the central business district.
- High parking charges were introduced to further discourage auto usage. A stepped meter was adopted.
- By 1990, a new bidding system was introduced to disincentivize car ownership. This time it was fine-tuned into different categories: small cars, big cars, weekend cars. There was a quota for each type of car. This program was unpopular, and the government adjusted the requirements and costs many times.
- To encourage car ownership outside of the center, the government provided rebate incentives to owners. Originally called the "Weekend Car Program," it was changed to the "Off-Peak Program."
- Other taxes including road use were implemented to pay for maintenance.

figure 14: Tampines Bus Station  
图 1 4 : Tampines的公交车站

figure 15: Tampines HRT Station  
图 1 5 : Tampines的HRT站  
RESEARCH THROUGH DESIGN: Design and Planning Typologies

### Integrated Land Use

- The establishment of the Land Transport Authority in 1995 integrates integrated land use development along transit corridors. The LTA is interested in delivering effective cost-efficient land use policies and programs. It is also interested in encouraging and improving appropriate commuting options for citizens.
- The government's strategy is to minimize the number of trips. Shorter trips imply less dependence on cars.
- A hierarchy of transit systems was developed to cater to the various development areas.

### TECHNOLOGY

A number of innovations were introduced to improve traffic:

- State-of-the-art signal optimization packages help to fine tune the average speed and patterns of traffic.
- A series of buses and taxis systems have been constantly upgraded to maintain a modern system.
- Mass rapid transit was conceived of in 1983 and fully completed in 1990. The project was fully financed by the government. The project integrated a network of 67 kilometers of tracks and 42 stations. The subway was managed privately by the Singapore Mass Rapid Transit Ltd.

### 综合土地利用

- 1995年成立的土地运输当局整合交通沿线的土地综合利用发展。他们关注制订有效的成本—效率土地利用政策和项目，鼓励和改善适当的市民通勤方式。
- 最小化行程策略：行程越短，对汽车的依赖越少。
- 发展不同层次的交通系统以满足不同发展区域的需要。

### 技术

一系列创新举措被引入交通

- 交通：先进的信号优化组合有助于提高平均速度和改善交通模式
- 一系列的公交车和出租车系统被不断升级以适应现代系统。
- 1983年酝酿的大规模快速交通最终在1990年完工。此项目完全由政府出资，是一个综合了67公里长轨道和42个站点的网络。1987年，地铁由私营的新加坡大规模高速交通公司管理。

Source: Yuen, Belinda. *Planning Singapore: From Plan to Implementation*. Singapore: Singapore Institute of Planners,



## CONCLUSIONS

As Gaoming moves into the new millennium and develops rapidly, the district must capitalize on the opportunity to implement innovative transportation strategies. The cases presented here underscore the need for integrating transport and land use planning, planning for adaptability, and planning for choice. Specifically, Gaoming should:

- promote transit-oriented development (TOD);
- maximize modal choice; and
- encourage regional coordination where possible.

## Next steps

The years to come will be critical for the growing city, and as development moves forward, the district must support early and visible successes and work to create a single transportation department to coordinate initiatives. Gaoming should also reserve land set-asides and adaptable rights-of-way for future development as Portland accomplished with TOD set-asides and Singapore with “forward thinking.”

A bright future lies ahead for Gaoming, and quality of life for the future residents of the district can be significantly enhanced by creating a transportation infrastructure now that can support the district for years to come.

## 总结

随着高明步入新千年和飞速发展，高明应利用机遇实现交通革新策略。以上分析的案例强调有必要综合交通和土地利用规划、适应性规划和选择性规划。高明尤其应当：

- 加速发展交通为导向的城市发展（TOD）
- 最大化形式选择
- 在可能的地方尽量做到地区协调。

## 下一步

随着不断发展，今后几年对于发展中的城市至关重要。地方必须支持早期令人瞩目的成就，并且应设立单独的交通局以协调这些新举措。高明还应借鉴波特兰发展TOD和新加坡从“超前意识”中获得成功一样，为今后发展保留预备土地和适应性的优先道路。

高明有着光明的未来，现在建设能服务未来的交通基础设施将会大大提高今后人们的生活质量。

在高明规划

*figure 1: Nature: Density as the Intensity of Diversity.*

图1：自然：作为多样性强度的密度

*Photo source: www.tropicalisland.de*

*Source: www.danforthcenter.org - Molview Lite CPK Model - Density*

## DENSITY & FORM : HIGH DENSITY

### 密度和形式:高密度

This research investigates the relationship between form and density in order to propose an urban fabric that can foster cultural and economic prosperity. Five hundred (500) persons per hectare were set as a base for investigation in order to correspond to the population projection provided by the city of Gaoming.

Currently in Gaoming up to eight-story buildings are walk-ups, which are much taller than other countries, which uses five stories as maximum walk-up height. In the future, local economy will grow, and people will demand a higher quality living environment in which convenience is critical. This research, therefore, introduces some methods for reducing the costs of multi-story housing without compromising living standards.

This research defines density as the intensity of space and activities. Increasing diversity, flexibility, and adaptability of uses is a key factor for successful urban design to create integrated communities with strong socio-economic, and cultural bases.

这项研究探讨形式和密度之间的关系从而提出可以提高城市文化和经济繁荣程度的建议。为遵循高明市的城市人口预测，本研究将500人每公顷作为研究基础。

目前高明市内无电梯楼房的楼层数限制为8层，这一标准大大高于其他国家通常采用的5层标准。未来当地经济将进一步发展，人们将会追求更高的生活环境质量，尤其是生活环境的便利程度。因此，本研究将提出既降低高层建筑成本又可保证生活质量的建议。

本研究将密度定义为空间和活动的强度。本研究得出的结论是，在同一个框架中提高空间和使用方式的多样性、灵活性和适应性是成功的城市设计的关键因素。因为这样可以创造建立在稳固的社会经济和文化基础上的一体化的社区。

**CASE STUDY ONE : Stockholm, Sweden**

Diverse building forms, large green space around buildings, integrated landscape, street hierarchy with logic in density changes and distributions

专题研究之一：瑞典 斯德哥尔摩

多样的建筑形式、建筑周围的大型绿色空间、一体化的景观、不同建筑密度和建筑分布的街道等级性分布

*figure 2: source: an architectural record book, McGraw Hill Book Company inc. 1962*

**CASE STUDY TWO : Paris, France**

专题研究之二：法国 巴黎

Waterfront promenade, building elevations, tree lines, rhythm in opaque and transparency facades, modern contemporary architectural styles

邻水的步行街、建筑立面、绿化带、封闭和通透建筑立面形成的节奏感、现代的建筑风格

*figure 3: source: www.housingprototypes.org 2004*

**CASE STUDY THREE: Stockholm, Sweden**

Balconies along the waterfronts, proximity to the water with leisure facilities, low traffic along the edge, warm building materials

专题研究之一：瑞典 斯德哥尔摩  
邻水的阳台、邻水的休闲设施、城市边缘的低交通流密度、具有温暖感的建筑材料

*figure 4: source: www.housingprototypes.org 2004*

**CASE STUDY FOUR : West End, Vancouver BC Canada**

Natural open space, varying building forms, visual corridors, leisure facilities with heavy landscape along the shore

专题研究之四：加拿大温哥华西部

自然的开放空间、多样的建筑形式、视觉长廊、沿海岸具有景观特点的休闲设施

*figure 5: source: <http://en.wikipedia.org/wiki/Vancouver>*

**CASE STUDY FIVE: Copenhagen, Denmark**

Communal facilities within block, mixed compositions of low and high rise, pedestrian oriented environment with easy vehicular accesses off street

专题研究之五：丹麦 哥本哈根

街区内的社区公共设施、低层和高层建筑的有机组合、为行人设计的环境同时在街道外易于接近车辆

*figure 6: source: [www.housingprototypes.org](http://www.housingprototypes.org)*

**CASE STUDY SIX : Oslo, Norway**

Color expressions, varying facade, large balconies, light building materials, diverse housing unit types

专题研究之六：挪威 奥斯陆

色彩表达、多样的立面、大阳台、轻型建筑材料、多样的住房单元类型

*figure 7: source: [www.housingprototypes.org](http://www.housingprototypes.org)*

### REDUCING THE COSTS OF MULTI-STORY BUILDINGS :

### 降低多层建筑的成本

As societies' gain wealth, individuals demand more amenities in their living environments. This, coupled with increasing labor and material costs will make high-quality, low -cost building extremely difficult. This section provides some options for reducing building costs.

不断增加的人力成本和建筑材料成本使得建设高质量低成本的建筑十分困难。本段为降低建筑成本提出几种可选择的方案。以下是高层住宅高效使用电梯的例子。但是，随着经济的发展，人们对于生活质量的期望提高，将会使住房标准的重要性超过建筑成本的重要性。

Below are examples of high rise flats with the maximum use of elevators.

*figure 8: Ogden Court, Chicago (left) & Eastgate, Cambridge (right) Source: McGraw Hill Book Company inc. 1962*  
图8: 芝加哥Ogden Court (左), 剑桥西门楼 (右)

#### **Skip floor elevator system**

In Singapore, many old multi-story housing without elevators are now retrofitted for elevators, which was quite costly. To help China avoid similar cost increases, it is important to investigate floor plans that can maximize elevator uses.

#### 跨楼层电梯系统:

在新加坡，许多没有电梯的老式多层住房现在被改造成适应电梯系统的形式，这些工程十分昂贵。随着人们富裕程度的提高，中国将会面临同样的问题。尽管如此，探讨有效使用电梯的方案仍然十分重要。

Due to the expense of elevators, many multi-story housing units are built without elevators in China. Eight- and nine-story housing is perceived as mid-rise, quite taller than that of many others countries where five-stories are the maximum walkup height.

电梯是一种非常昂贵的设施，这使得许多多层建筑缺少电梯。在中国，8到9层的住房被认为是中等楼高，可步行到顶层，这个标准比大多数国家规定的5层要高得多。

In skip floor elevator systems, only a limited number of floors have direct access to elevators. The other floors either walk up or down to reach individual housing units. The elevator thus serves a large number of people without much waste of corridor space. Moreover, amenities can be added at the elevator access floors.

在跨楼层电梯系统中，只有某些楼层可直接使用电梯(单数的楼层)，其他楼层的居民可以步行到这些楼层乘坐电梯。在这个系统中，电梯可以为这个楼房的居民服务，又不牺牲走廊的空间。一些便利设施可以建立在电梯直接到达的楼层。

**Building structure**

Various building structural systems depart from the conventional rigid frame structure. A cellular structure, first introduced by Europe and called stressed skin structure, utilizes the strength of building material property with geometric compositions. Below compares a cellular structure with other conventional structures.

**Load bearing wall:** 承重墙

Its cost is less than skeleton frames since walls integrate materials to load bearing. There is no extra partition to fit in for spatial enclosure which increases the dead load of buildings. However, this structure limits the flexibility of space.

蜂窝结构将比框架结构成本更低，因为蜂窝结构的墙将材料和承重结合起来。因此不需要多余的隔墙来围绕空间，而多余的隔墙将会增加建筑的净自重。但是蜂窝结构会降低空间的灵活性。

**Skeleton frame:** 框架结构

This structure allows extremely flexible space, but due to the separation between building materials and load bearing, it requires excessive structural design to support the dead loads of the partitions.

这种结构允许空间有极大的灵活性，但是由于建筑材料和承重的分隔，它需要更多的结构设计来承担隔墙的净自重。

**Cellular structure:** 蜂窝结构

This structure minimizes partition walls and utilizes building materials for load bearing. It provides column free space and combines sheer with the elasticity of structures. However, this structure requires complicated structural design. As such, unless there is technical expertise, this structure may cost more than other structures.

这种结构使得隔墙的使用达到最小，使用建筑材料来承重。它提供了无支柱的自由空间与结构的灵活性的结合。但是这种结构需要复杂的结构设计。如果没有专业技术，这种结构的成本将高于其他结构。

## 建筑结构

蜂窝结构是一种不同于传统呆板的框架结构的结构系统。它最先由欧洲传入，最早被命名为强化表面结构，将建筑材料的强度和几何结构结合使用。以下是蜂窝结构和其他传统结构的比较。

*Load Bearing Wall* 承重墙

*Skeleton Frame* 框架结构

*Cellular Structure* 蜂窝结构

*figure 9: Source an architectural record book, McGraw Hill Book Company inc. 1962*

### NEW URBAN DESIGN WITH COMPARATIVE ANALYSIS :

### 新城市设计的比较分析

This section conducts comparative analysis between a proposal and an existing condition. Each uses five hundred (500) people per hectare density as a base. Given the same density, the existing block form is uniform and monolithic, whereas the proposed block form is pliable. The proposed block has continuous green space networks and generates activities through the varied intensity of land uses.

本段对提案和现存情况的比较分析，使用500人每公顷作为密度的基准。在同样的密度之下，现存的街区形式是单一和整体性的，提案的形式是可变的。提案有连续的绿色空间并通过土地使用的强度来产生不同的活动。

#### Urban design concept

This research suggests density as the intensity of space should be as a new standard for urban design. Implementing diverse programs in open space is critical to provide multiple choices and distinctive urban character. Open space should be large enough to accommodate many activities, yet small enough to generate and maintain intimacy.

#### 城市设计概念

本研究将密度定义为空间的强度，这对城市设计来说是一个新的标准。在开放空间中应用多样的设计为城市提供了空间使用的多种选择，并赋予城市独特的特点。开放空间必须具有足够大的面积来提供各种活动的场所，但是又需要控制在一定的面积以内来维持亲密感。

Integrated communities are communities where diverse socio-economic characteristics flourish. They have been recognized as a model for sustainable communities by many sociologists. Urban places with distinctive character can create integrated communities which draw people beyond the neighborhood boundaries.

一体化的社区是多种社会经济特点蓬勃发展的社区。社会学家认为这种模式是可持续发展的社区模式。具有独特特性的城市空间可以创造一体化的社区，从而人们的活动可以超越小区的边界。

Flexibility and adaptability will densify space since these elements draw on synergetic effects through the intensity of space. This research proposes "the palimpsests of activities" in space since space bears the memory of activities that have taken place. Space will become richer through adaptations. Therefore, adaptable and flexible space and land use are essential for sustainable urban design.

灵活性和适应性可以增强空间的使用，因为它们可以带来空间强度的合能效应。本研究提议在空间中建立“历史活动的体现物”，因为空间记载着历史事件的记忆。通过调整空间会变得更丰富。因此，灵活性和适应性对于可持续的城市设计是十分必要的。

figure 10: An existing Urban Form 图10: 现有城市形式

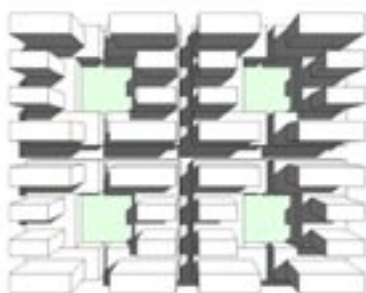
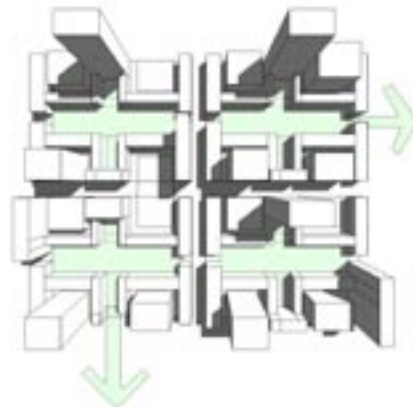


figure 11: A new proposal 图11: 新建议的形式





"Urban rooms," such as squares or parks, not only generate spatial identities, but also function as shelters for communities. As a person needs a shelter, so does a community. Therefore, this research recommends that Gaoming provides many unique urban rooms, small and big, with distinctive programs and landscape features, so that people can interact and further develop a sense of belonging.

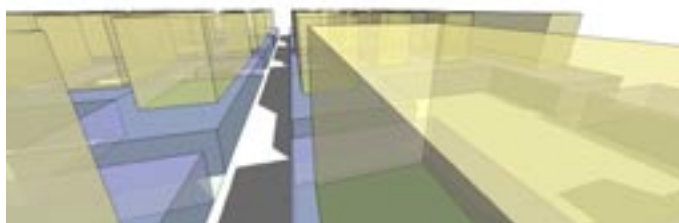
Density around urban rooms should reflect market demand, but social welfare policies should safeguard affordability of communities. The size of neighborhoods should be based on the radius of programs rather than that of pedestrian walking distance because mobility changes constantly with respect to personal interest, economic resources, and technology.

Kevin Lynch in his book *Site Planning* introduces the concept of the social unit, a concept that maps the size of communities based on numbers of people and strength of their social networks. In the book, Lynch argues that in general people can greet by name up to thirty persons within a neighborhood; therefore, thirty persons should be conceived of as a module for the social unit of communities. Urban design proposed by this research experiments the social unit concept in order to reflect the intensity of social networks within space.

Lastly, this research concludes that diversity will draw on intensity and that intensity will generate adequate density from which integrated economic engines will derive.



figure 12: An existing Urban Form 图12: 现有城市形式



“城市的房间”，比如广场和公园，不仅可以产生空间的特征，也可以作为社区的家。人需要家，社区也需要家。因此，本研究建议城市提供许多大小不同的独特的“城市房间”，具有独特的内容和景观。人们可以相互交流，产生更强的归属感。

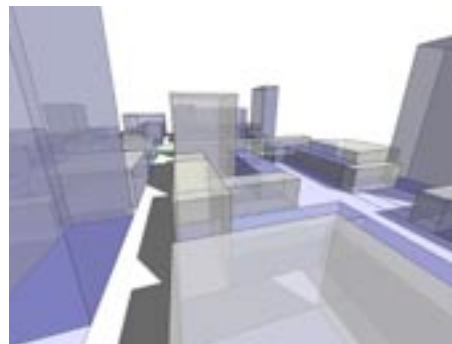
城市房间周围的密度应该体现市场需求，但是社会福利政策必须保证社区的承受能力。小区的大小应该以各种活动的半径为基础，而不应以步行举例为基础。因为流动性随着人们兴趣的变化、经济资源的变化、科技的变化而变化。

凯文林奇的《场地规划》一书介绍了社会单元的概念。这一概念以人口和社会网络的强度为基础描绘社区的大小。林奇认为通常一个人在一个小区中可以叫出最多30个人的名字。因此，30人应该被看作社区的社会单元的度量标准。本研究提议的城市设计试用社会单元的概念来反映空间中社会网络的强度。

最后，本研究得出的结论是多样性依赖于强度，强度可以产生足够的密度来整合经济发展的动力得到的结果。

figure 13: A new proposal

图13: 新建议的形式



## 在高明规划

figure 14: An existing Urban Form 图14: 现有城市形式

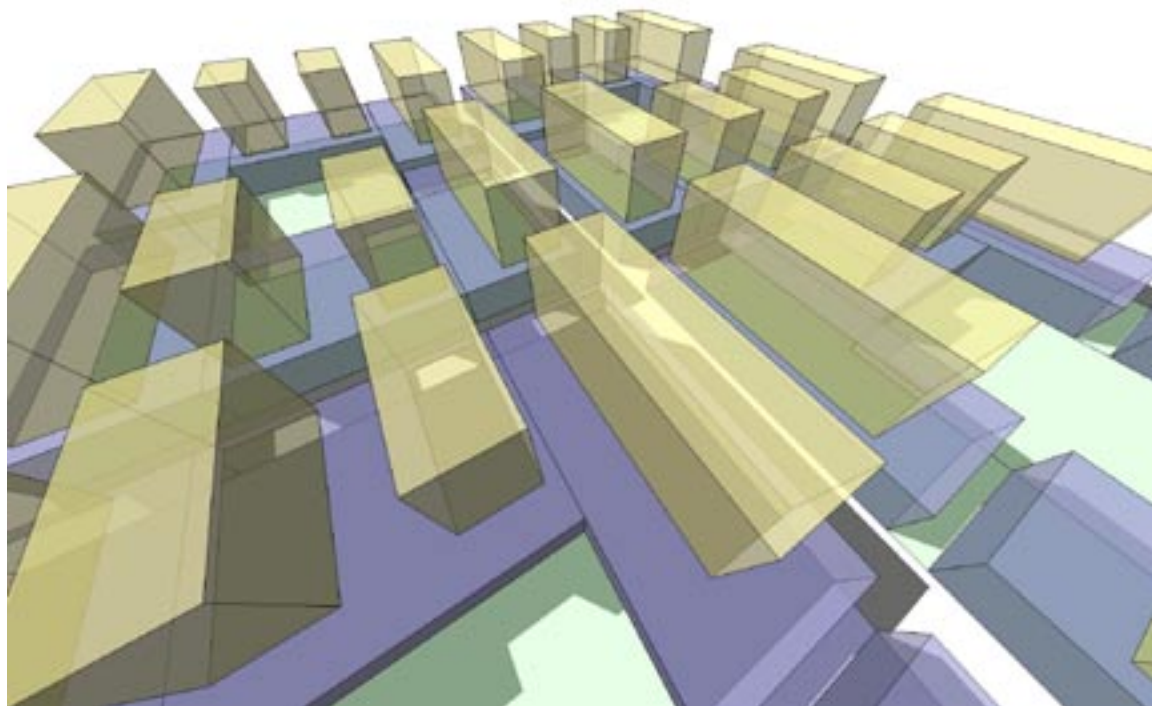
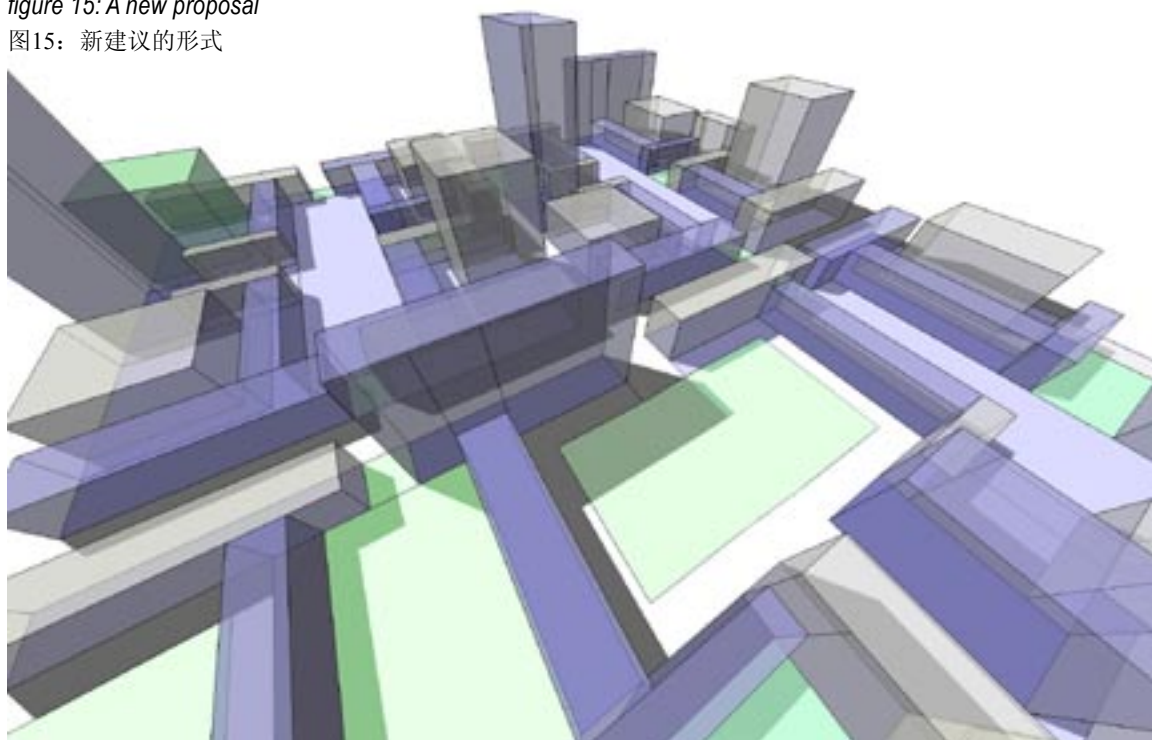


figure 15: A new proposal  
图15: 新建议的形式



## DENSITY AND FORM: MID-DENSITY

### 密度和形式：中等密度

#### Context Analysis in Gaoming

A walk through the current city of Gaoming reveals streets and few open spaces, which are intensely used and therefore can be seen as the prime locations for social interaction. These social interactions foster a sense of community, which must not be forgotten during design for expansion of the city. Therefore, it is necessary to plan for these open spaces within the new fabric of the city. As it is desirable that open spaces always be provided within walking distance from any given point within each neighborhood, the formulated location of each space relies on a standard policy of open space allocation for each new housing block. As the policy will allow freedom for the developer to choose either green space or designated community facilities, the balance between impervious surface, green space, and built form will be a diverse mix, reflective of the street life in Gaoming.

#### Recommendations

This policy of open space allocation for housing blocks will bring a sense of identity and civic pride, as each green space will beautify not only the block itself, but also the larger community of the Gaoming as a whole. Recommendations for Gaom-

#### 高明市背景分析

在现在的高明市行走，只能看到很少的开放空间。这些开放空间都被密集地利用，因此它们可以被看作社会交流的主要场所。这些社会交流加强了社区的感觉，这种感觉在设计城市扩张的过程中不应被忘记。因此，在新的城市结构中规划这些开放空间是十分必要的。理想的开放空间设计应该使人们从任何社区中的任何一点都可以步行到开放空间，因此构想中的开放空间的位置依赖于对每个新居住区进行开放空间分配的政策。由于政策允许开发商在绿色空间或指定的社区设施之间进行选择，所以不受影响的地表空间、绿色空间和建筑形式的平衡将是一个多元化的混合，就像现在高明市的街道上的生活一样。

#### 建议

该居住小区开放空间分配政策将提高市民的归属感和自豪感，因为每个嵌入居住区的绿色空间将不仅属于小区本身而且属于高明市的整个社会。为了使高明市达到均衡分配绿色空间的目标，我们的建议如下：

## 在高明规划

ing to achieve this even distribution of green space are:

### Policy

- Gaoming should establish a Parks and Open space Board
- This Board should then set aside land for integrated green public/ semi-public space
- The Board shall place a tax on residents in order to cover surveillance and maintenance costs of open green space.
- This Board shall be monitored by the City of Gaoming

### Finance

The City of Gaoming shall oversee the Board, but shall have no direct connection with the finance of the Board. The Open and Green Space Board shall manage independently all its financial takings.

### Implementation/ Phasing

First, the Parks Board shall establish a set ratio of built floor area to require green space for each unit of developable land

### 政策

- 高明市应该建立一个公园与开放空间管理委员会
- 该委员会应该为整合的绿色公共或半公共空间留出土地
- 该委员会应该对居民征税，将税款用来监管和维护开放绿色空间。

该委员会应该由高明市财政局管理高明市政府应该监督该委员会，但是不应该有财政上的直接联系。开放和绿色空间管理委员会应该自行管理与之有关的财政事宜。

### 执行/阶段

首先公园管理委员会应该为每个标准化的可开发用地单元建立一个固定的开放绿色空间/建筑楼层空间比例。

这些标准化的用地单元应该是300米×300米见方，如果交通线路不允许，用地单元可以是类似300米×300米见方的其他面积。

figure 1: Chart showing different levels of public / private space in various existing project

图1：下表显示了不同现有项目的公共/半公共空间

	public		semi-public		private
Project	 Central Park	 MFO park	 IBM bldg- interior courtyard	 cul-de-sac	 Ang Mo Kio
site description	New York city	Zurich	New York city	England	Singapore
basic policy	urban open space	Free Space Concept	developer incentives for integrated public spaces/ zoning bonuses	developer funded/ shares sold to investors	New Town- HDB 1996 MUP (Main Upgrading Program)
private facilities	None	None	private office space	residential private communal facilities	playgrounds, lounges and education center
community facilities	botanical garden restaurant sports facilities	outdoor concerts convention space open plaza space	interior atrium space- accessible to public during business hours only.	private resid. facing public street	gated, private interior green space

**SINGAPORE: ANG MO KIO HOUSING COMPLEX****Background**

Completed in 1982 as a New Town prototype and upgraded in the late 1990s, Ang Mo Kio has 11 residential blocks with 1100 units total divided into “precincts” in order to promote walkability and a sense of neighborhoods

**Green Policy**

A recent study was conducted in order to evaluate the quality and usage of spaces in numerous of the Ang Mo Kio Housing precincts. The study proved that the more intimate peripheral spaces, those which were partially covered by the building mass, were the ones most frequently used for all types of activities throughout the day. This is due to the fact that the climate is more comfortable when there is partial shading. Therefore, the vast open green space provided in the center of these typical housing complexes proves the least desirable place for inhabitants to take part in social activities.

**Design Guidelines**

The upgrading of this particular housing project included the introduction of various community facilities and more activity facilities solely for private use of the residents.

**新加坡：ANG MO KIO 住宅综合区域****背景：**

完成于1982年的新城原型，90年代末进行了升级，有11个居民区，1100个单元。被分化为分区，以增强支持步行能力、提升居民区的感觉。

**绿色政策：**

最近对ANG MO KIO 的各个小区进行了研究，以评价空间的利用和使用质量。研究证明，联系紧密的边缘空间，也就是部分被建筑群覆盖的空间，是一天中各种活动使用最频繁的空间。这是由于当有部分被建筑物的影子覆盖时，人们的感觉更加舒适。因此，建立在这些建筑综合体正中的开放绿色空间被证明是人们最不喜欢进行社会活动的地

**设计指导思想**

对这个居住区工程的升级包括各种专为小区居民使用的社区设施和各种活动设施的提供。

*figure 2:*

*Interior photograph of atrium space in IBM building, NY (above)*

图2：纽约IBM大楼内的中庭空间（上）

*figure 3:*

*Photograph of interior private green space of Singapore housing precinct (left)*

图3：新加坡住宅区内的私家绿地（左）

### ZURICH, SWITZERLAND: MFO PARK

#### Background

MFO Park opened in July of 2002. Zurich held a competition held for the design- promoted citizen involvement in the final scheme selection. Accommodates everyday use as well as large planned events. This park was built as the second of four public areas in the Centre Zurich North. Its size is around .85 ha and it is open for every person who is interested in games, open-air cinema, theatre or concerts.

#### Green Policy

Every two years a questioning of the citizens is carried out to check the quality of life in Zurich. The survey in 1999 showed that the green areas and parks as well as the public transportation system are the main reasons quoted for this high quality of life. When asked about the biggest problem confronting the city of Zurich at present time, citizens mentioned traffic most frequently. The city will concentrate its future efforts on:

- Rearrangement of existing green spaces
- Maintenance of existing green spaces

*figure 4: Photograph of covered outdoor space- used for concerts*

图4: 户外有顶空间, 用于演奏表演

*figure 5: Photograph of covered outdoor space- public*

图5: 户外有顶公共空间

## 瑞士 苏黎世：MFO公园

## 背景：

开放于2002年7月，曾进行过设计竞赛，在末轮的选拔中提升市民的参与程度。为日常使用和大型活动提供场所。

本公园是北苏黎世中部四个公共区域中第二个建立的。它的大小约为0.85公顷，为对游戏、室外活动、戏剧或音乐会感兴趣的人们开放。

## 绿色政策：

每两年苏黎世会对市民进行一次问卷调查来检验苏黎世的生活质量。

1999年的调查显示，绿色空间和公园、公共交通系统被认为是苏黎世高生活质量的主要原因。当被问到现在苏黎世面临的最大问题的时候，人们提到最多的是交通问题。从这一观点来看，城市未来可以将精力集中在：

- 重新安排现存的绿色空间
- 维护现存的绿色空间

## 设计指导思想：

在《自由空间概念》（苏黎世市1999年提出）中，计算和确定了三种不同的人均绿色空间面积。

- 城市中的每个工作空间应该保留5平方米的自由空间，
- 城市中的每个居民应该保留8平方米的绿色空间，
- 建筑的每层空间应该保留50平方米的未开发土地

## 目标：

- 重要的开放空间框架
- 可持续发展的机会
- 所有区内都有公共开放空间
- 门阶处的自由空间
- 多样化的农业区域

小结：更多的住房发展与开放绿色空间的整合。

figure 6: Photograph of open public plaza space

图6：开放公共广场空间

- Designing of new green spaces

## Design Guidelines

In the Free Space Concept (set forth in 1999 by the City of Zurich) three specific amounts of square meters of green spaces per inhabitant were calculated and fixed.

- Every working place should reserve five square meters free space in the city.
- Eight square meters of green should exist per every inhabitant of the city.
- Fifty square meters of undeveloped land should be acquired per every floor surface area of buildings. (as per <http://www.urge-project.ufz.de/>)

## Objectives

- A significant open space framework
- A chance for sustainability
- Public open spaces in all districts
- Free areas at the doorstep
- Living space for nature in the city
- Diversified agricultural areas

## Summary

More integration of housing developments with open green

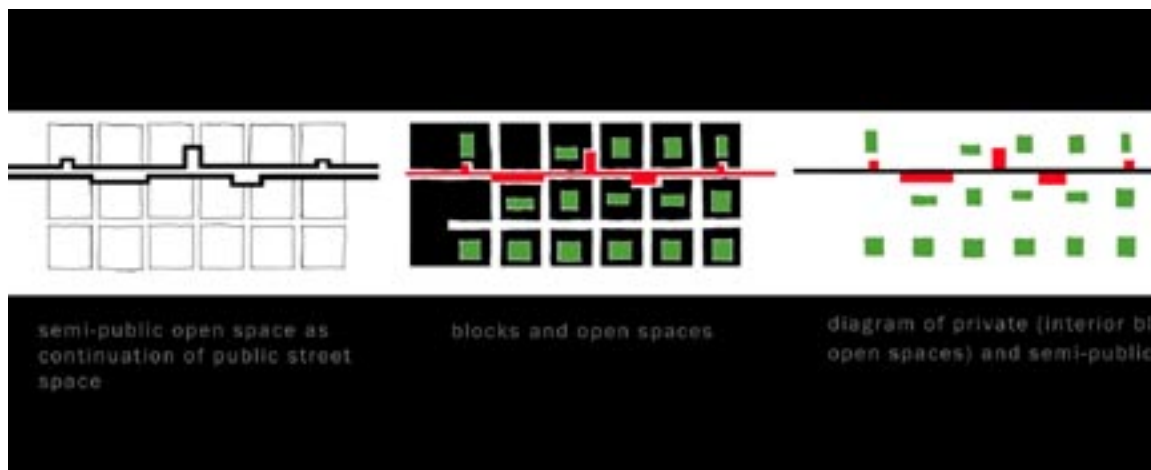


figure 7: Diagram of introduction of semi-public space into private blocks.  
图7: 图表所示由半公共空间到私人空间的过渡

## PROPOSAL

### Open space / housing block integration

The most appropriate housing typology for Gaoming, China is a hybrid of Western building technologies and systems with the traditional Chinese building form. Looking at the traditional Chinese housing typology one can see a very strong presence of the community and an emphasis on social interaction. Therefore, having recognized the importance of this interaction, a new housing typology may be designed with dedicated volumes of space, which must be accessible to the public. This typology may take the form of the current perimeter block, however, should be continuously punctured along the street edge, allowing the public space of the street to bleed into the “trapped” space at the center of the block.

This would recreate the dynamic public street environment, which characterizes many traditional neighborhoods, while providing modern housing facilities of an improved standard. The block’s central green space may still be closed off to the public, as is desired for reasons of security, however, this private space would be smaller than what is currently being built. The small sacrifice of a portion of this space will prove beneficial as it is traded for public access, which will promote a more



提案:

开放空间与居住街区的整合

对中国高明市来说，最适当的住房结构是西方建筑技术和系统与传统中国建筑形式的结合。观察中国传统住房结构，我们可以发现有非常强的社区存在，而对社会互动也非常强调。因此，认识到互动的重要性，新的住房结构应该为大众活动创造大量的特定空间。这一结构可以采取现存的有周界街区，但是沿街一面应该开放，允许街道的公共



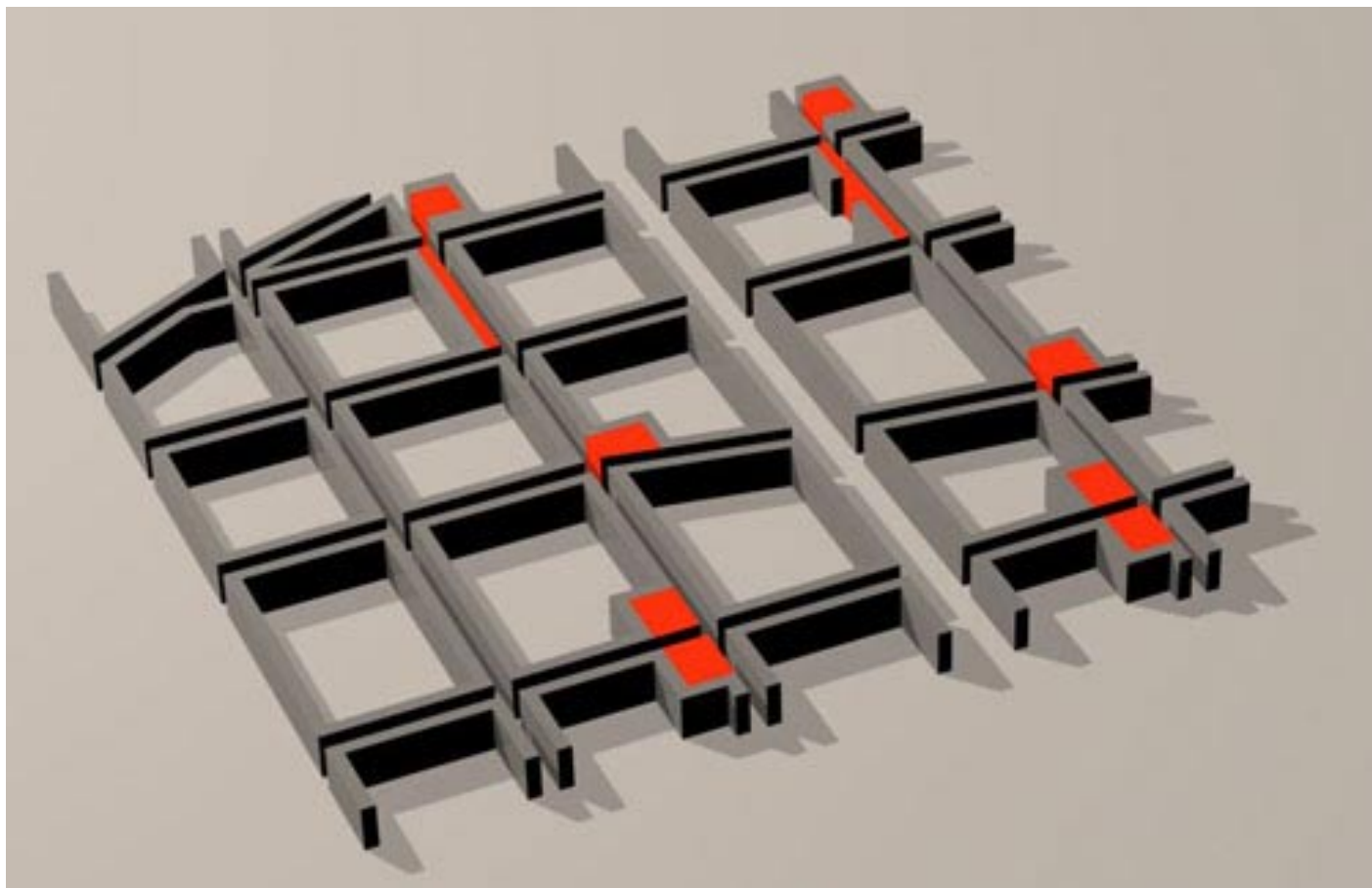


figure 9: Diagram of semi-public open space inserted into housing blocks.

图9：概念图显示了半公共开放空间被镶进居民区中

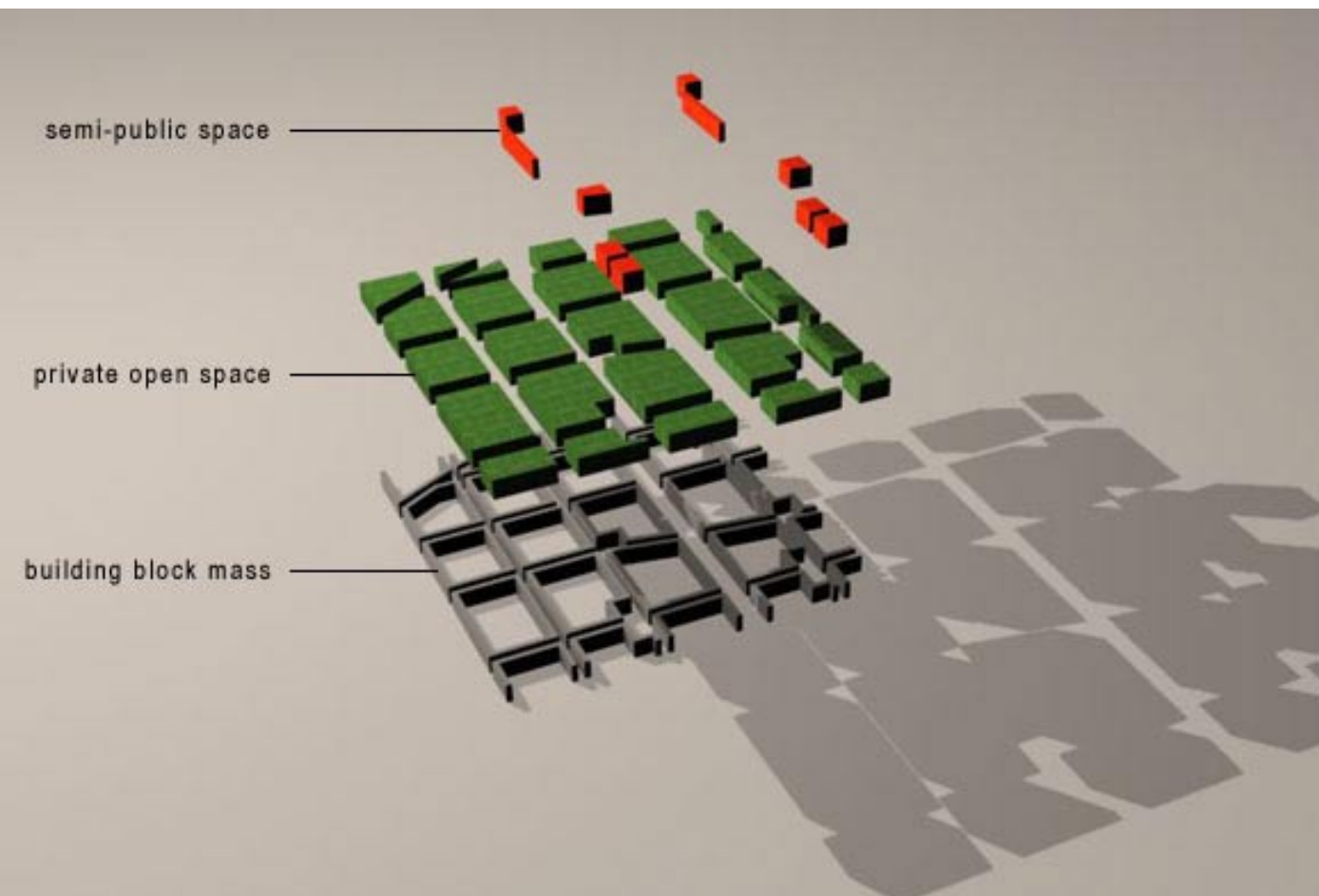
active community environment for the neighborhood.

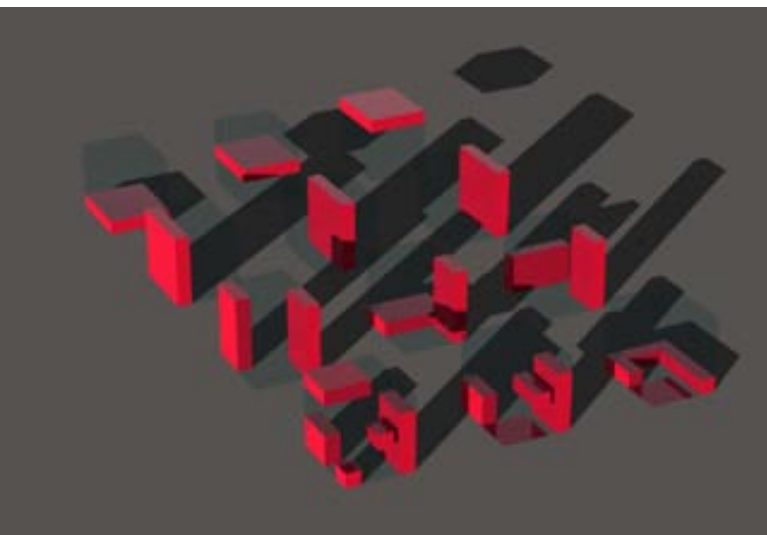
Each semi-public open space may be either left as open park/plaza space or may house a community facility such as a meeting hall, athletic center, or cultural center. The integration of various programmatic elements will bring diversity in uses to the neighborhood, creating readily accessible amenities and leisure activities, as they will continuously be thread throughout the fabric.

空间融入街区的封闭空间之中。

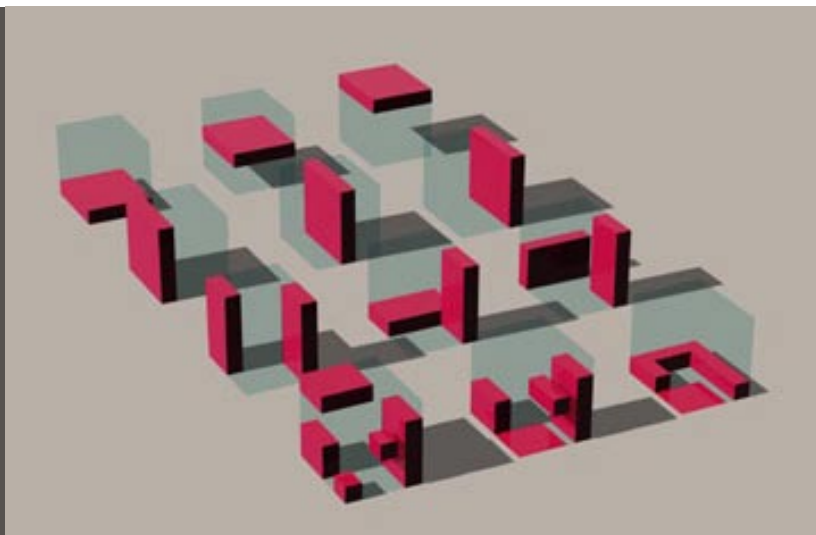
这将重新创造动态的公共街道环境，这些环境已经具有了许多传统的小区，新的设计提供了更高标准的现代住房设施。为了保证街区的安全，街区的中心绿色空间将仍然会对公众封闭，但是这些私人空间将会比现存的小。稍微牺牲这部分空间将会对增加公众可接近的空间有利，这将会创造更加活跃的社区环境。

## 在高明规划





*Shading at 3:00 pm. December*  
楼宇所造成的影子，十二月下午3点



*Shading at 3:00 pm. June*  
楼宇所造成的影子，六月下午3点

*Opposite page above: exploded diagram of open space hierarchy with mid-density housing blocks*

*Opposite page below: Schematic street perspective, shows continuous integration of semi-public spaces*

对页上图：分解了的开放空间层次和中等密度住宅群

对页下图：街面透视图，显示了连续的半公共空间的整合

## OPTIMAL SUN AND SHADE COMPOSITIONS

In order to optimize sun shading and exposure, various volumetric configurations were investigated using the two extremities of daylighting: one mid-day summer and the other mid-day winter. This may be useful in design of semi-public open spaces. As seen in Ang Mo Kio housing project, the most important attribute of an open space is its availability to please those wishing to take in sun and those who wish to be shaded from the sun.

## ENHANCEMENT OF STREET LIFE

As seen in the schematic street perspective to the left, introduction of these semi-public spaces into each housing block would provide an active street life for pedestrians and therefore enhance the social interaction within any given neighborhood.

## 最优化的阳光和阴影组合

为了优化阳光阴影和无遮蔽空间，我们使用两种极端的光照：夏天的中午和冬天的中午，探索了各种体积的布局下的情况。这将对半公共空间的设计有所贡献。正如在Ang Mo Kio住宅项目中看到的，开放空间最重要的特征是它对希望接触阳光和不希望接触阳光的人们来说的可用性。

## 加强街道生活

正如在左侧的街道透视图所示，在每个住宅街区引入这些半公共空间将会为行人提供更活跃的道路生活

在高明规划

## CIVIC CENTER

### 市政中心

The Civic Center in Gaoming's proposed master plan is featured prominently. Many of the principles that inform the plan are well founded: dynamic mix of uses and integration of civic center with the Xiu Li River. From our observations of these elements we catalogue five examples of civic centers in Boston, MA; Milwaukee, WI; Providence, RI; Shatin, China; and Bilbao, Spain. Through each of these examples we explore context, location, design program, services/cultural events/functions, surrounding land use patterns, development history, and lessons learned. The geographic location of the site is contextualized at a macro and micro level. The location of the civic centers is also explored symbolically in relation to water bodies, the center of the city, and other civic aspects. The program elements are also detailed including materials, parks, plazas, structures, statues and sculptures.

Civic centers are also important gathering places and as such we looked at the services, cultural events and functions of the civic center. American planners focus on the importance of mixed use development and we immediately picked up on this element of the proposed plan. Another focus of these case studies is the surrounding land use pattern. The intent of this focus is to understand what works well in terms of creating dynamic, well-used space. Finally, we looked at the development history of the civic center including funding and phasing the project. We do not intend for these case studies to be prescriptive, but rather they serve to highlight cases that have succeeded in some areas and not as well in others.

在高明的总体规划中，市政中心举足轻重。在总体规划中的很多指导原则都可以在市政中心中找到：例如多元的混合土地利用和整合市政中心与秀丽河。我们列举了五个城市的市政中心为参考：美国麻萨诸塞州的波士顿、威斯康辛州的密尔沃基、罗得岛州的普罗维顿斯、香港沙田，以及西班牙的毕尔巴鄂。对以上的市政中心，我们分别考察了其背景、位置、设计、服务/文化活动/功能、周边土地利用模式、开发历史及经验教训。位置从宏观和微观两个角度进行了分析，包括与水体、城市中心、以及其他市政要素的关系。此外，我们对设计要素的材料、公园、建筑、结构、雕塑等也进行了详细阐述。

市政中心是重要的集会场所也担当了市政服务和文化活动中心的功能。美国规划界注重混合土地利用开发，在高明的未来规划中看到了类似的手法。另外，专题研究重点分析了市政中心周边的土地利用模式。我们希望由此帮助我们了解如何可以更好地创建有活力和高使用率的空间。最后，我们考察了市政中心的开发历史，包括项目资金利用和项目分期。所提供的例子并不意在提供确定性的答案，而是提供一些可供参考的个案。

## 在高明规划

### 城市设计原则

- 1. 混合土地利用**  
提供多元功能，多角度充分利用空间
- 2. 平衡公共和私人空间的尺度**  
既方便公共集会，又设计精巧，使得在尺度上创造适以人为本的使用空间
- 3. 设计适应不同群体的需要**  
市政中心根本上是要为每一个市民服务，其设计应该方便每一群体的使用，方便老人、儿童、中年夫妇、携带小孩的年轻夫妇、放学的青少年、蹒跚学步的幼儿等等
- 4. 保护本土文化**  
大众的日常文化在现在看来似乎没有保存的价值，但是它却因快速发展而面临逐渐遗失的危机。市政中心的设计不应该忽略本土文化的重要性，而应该保留、延续、再开发本土文化并使其在环境上和文化上都成为当地历史的一部分。
- 5. 多种交通方式和多进入点**  
市政中心应该通过各种交通形式与城市的各个部分相连。机动车道固然重要，但良好的步行径系统对于吸引公众使用公共空间也十分关键。
- 6. 城市形象建设**  
市政中心集中表达城市形象。高明定位山林水都，其市政中心应该反映和强化这一城市形象。
- 7. 丰富的活动**  
除注重鼓励日常使用外，市政中心也是提供市政功能和活动的空间。除了硬件建设外，正正是这些集体活动帮助谱写了一个地方的历史。
- 8. 开放空间**  
开放空间是市政中心不可获缺的一部分。

以设计作研究：设计和研究类型

### URBAN DESIGN GUIDELINES

- 1. Mixed use**  
Provide a diverse mix of products to invite use throughout day and night.
- 2. Balance between public scale and scale**  
Ability to accommodate public gatherings, but also designed carefully so that the scale will not intimidate individual personal uses.
- 3. Design with different constituents in mind**  
A civic center essentially belongs to everyone, so it should be designed in away that is welcoming to different constituents: seniors, middle-age couples, young couples with children, after school teenagers, toddlers learning to walk, and others.
- 4. Preserve local culture**  
Ordinary people's daily culture may not seem important to preserve at this point, but it certainly is being eroded gradually with fast development. The design of a civic center should not dismiss the importance of local culture, but rather should preserve, extend, and reinvent local culture and make it become a part of the local history, both physically and culturally.
- 5. Multiple modes and access points**  
The center should be connected to different parts of the town through various transportation modes. Vehicular connection is important for formal uses, while pedestrian connection is critical for attracting people to use a public space.
- 6. Identity construction**  
The civic center shall be the epitome of the city's identity. As Gaoming is water capital with green hills, the civic center shall reflect and reinforce such identity.
- 7. Activities**  
In addition to encouraging daily uses, the civic place should hold a space for civic functions and activities. It is these public activities that help create collective memories of a place in addition the civic center's physical design.
- 8. Open space**  
Open space should be an integral part of the civic center.



figure 1: Site of interest: City Hall Plaza 图 1 : 市政厅广场所在地

figure 2: Boston waterfront 波士顿滨水区

figure 3: Faneuil Hall--Festival Marketplace  
图 3 : 法尼尔楼—节日市场

## CASE STUDY ONE: BOSTON, MASSACHUSETTS, USA

### Introduction

Boston is a city of 580,000 people located in the state of Massachusetts on the east coast of the United States. There are two highways that slice through the city; one is less than a mile from City Hall Plaza. Boston is an interesting case because it is of a similar size to Gaoming, it is very near Boston Harbor and the Charles River, and there are lessons that can be learned from City Hall.

## 专题研究之一 美国麻萨诸塞州的波士顿

### 引言

波士顿位于美国东海岸的麻萨诸塞州，人口 58 万。城市空间被两条高速公路划分为几个区；其中一条高速公路连接市政厅广场。对于高明，波士顿是个很恰当的例子，它靠近海港和查尔斯河。我们可以从波士顿市政厅的建设中得到有益的启示。

## 在高明规划

### Location

Boston City Hall Plaza is in the historic heart of Boston on the site of an old neighborhood, Scollay Square. The neighborhood was redeveloped in 1968 as a civic center in Boston. City Hall is well located and is in walking distance to Faneuil Hall (a tourist market place), the Boston waterfront, the financial district, and two major transit locations. The elevated highway that divided Boston from its waterfront has been removed and in the coming years city officials will make an effort to reconnect the urban fabric with Boston Harbor. The planned Rose Kennedy Greenway is a 30-acre linear park.

### Design Program

The design program of City Hall Plaza is spartan. The plaza has a very austere feel and impresses visitors as a serious structure. From an American aesthetic perspective, this is not always the most welcoming design—and as a gathering place, the plaza fails. There is very little foliage and during summer months the plaza is sun drenched. During the fall and winter it is windswept and often abandoned.

### Materials

City Hall and the surrounding plaza are austere. City Hall is designed in the monumental style and is built of reinforced concrete primarily. There are very few additional decorative elements on the exterior of the building. The building is at grade with the road on the west side of the site, and is above grade at the east side. There is a set of stairs that descends towards a popular tourist destination site, Faneuil Hall. Surrounding city hall is an expansive plaza of brick pavers, occasionally punctuated by ribbons of concrete. Set on the pavers are a few concrete geometric structure. These serve the functional purpose of benches.

### Parks and Plazas

Again, there is a brick plaza that encircles City Hall (see aerial view). There are very few decorative elements throughout the plaza.

### Structures, Statues and Sculptures

There are concrete trash receptacles and some concrete benches, but no statues to speak of.

### 位置所在

波士顿的市政厅广场位于波士顿的历史核心区，建于早先的斯科利广场社区。该社区在1968年作为波士顿的市政中心得到了再开发。市政厅区位良好，徒步可达旅游市场的法尼尔楼、波士顿滨水地带、金融区、以及两个主要的公共交通中心。

过去分割了城市与滨水带的高架高速公路已经被迁移。政府人员将在未来的几年内努力重新将波士顿港和城市干线连接起来。规划中的罗丝肯尼迪绿带是一个占地30亩的线性公园。

### 设计

市政厅广场设计属斯巴达风格，设计庄严肃穆。从美国审美的角度来看，这一设计并不大受欢迎。另外，广场的集会功能也没能实现。广场附近缺乏树木植被，夏季广场炎热干燥，秋季和冬季多风荒凉。

### 材料

市政厅和其周围的广场形成了严肃质朴的气氛。市政厅是钢筋混凝土结构，透露着一股庄严的气派。建筑的外面，星星点点可以看到一些点缀物。东西两条路夹着整个建筑群，形成一个东低西高的坡度。拾阶而下，就来到了法尼尔楼，这里是游客经常游览的地方。市政厅周围的广场，方砖和石子构成了其间的小路，铺路砖上还显现着几何图形，铺路砖上的图形提示人们路边长凳的功能。

### 公园和广场

刚才提到，市政厅的外面是一个砖砌的广场（看航空照片），该广场点缀着一些装饰物。

### 结构，雕像和浮雕

广场上有一些水泥做的垃圾箱和水泥长凳，但是没有任何雕像和浮雕。



figure 4: Financial District  
图 4：金融区



figure 6: Boston City Hall  
图 6：波士顿市政厅

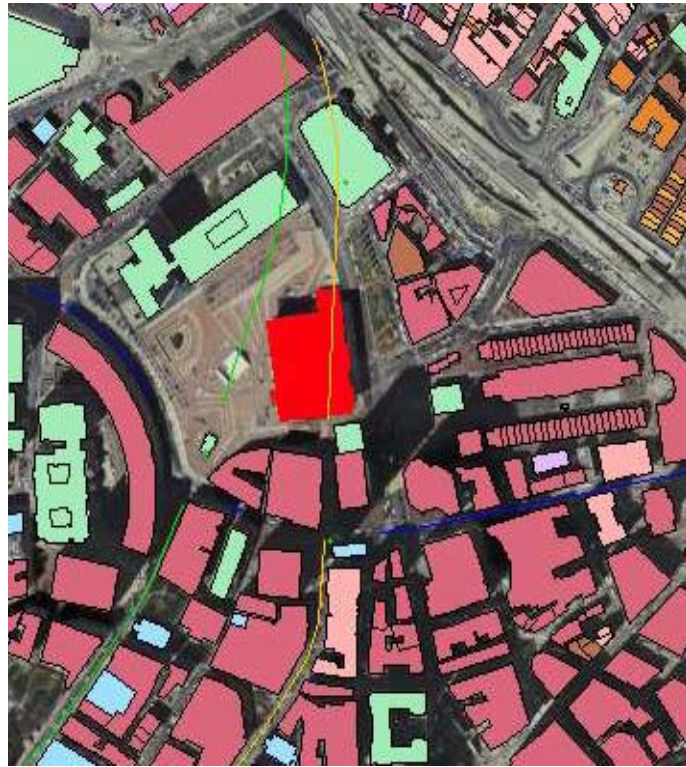


figure 5: Surrounding Land Use Pattern, BRA  
图 5：市政中心周边土地利用

figure 7: Boston City Hall as gathering space  
图 7：市政厅为群众聚集点

figure 8: Beacon Hill neighborhood  
图 8：灯塔山社区

## 在高明规划

### Services/cultural events/functions

When temporarily programmed to host events or functions, City Hall is a very good location for thousands of people to gather. Events are held at city hall ranging from concerts, to parades, to sports celebrations, to political rallies.

### Surrounding land use patterns

The surrounding land use pattern is similar to those of the other five case studies and represents best practice in the mix of uses. The orientation of land use creates a dynamic synergy and this is evident by the popularity of the location. City Hall sits at a point between different nodes—residential, financial district, government buildings, festival marketplace.

### DEVELOPMENT

City Hall is built on the old neighborhood of Scollay Square. Scollay Square was a seedier part of the city; despite that (or maybe because of this) it held particular appeal for many Bostonians. Many citizens of Boston objected to the way in which Scollay Square was razed without much input from the users of that space, but the city felt pressure from the economic downturn during the 1940s and 1950s and looked to redevelopment projects as a way to revitalize the economy.

### LESSONS LEARNED

Given, American aesthetic, City Hall Plaza is not a success. The plaza is exposed to the elements—windswept and sun drenched during the summer. However, the surrounding land uses redeem the design program in that the site is used to cross from nodal development to nodal development.

figure 9: Overview of Boston  
图 9：波士顿远眺

### 服务 / 文化活动 / 功能

活动需要时，市政厅是一个举办庆祝活动的地方，它可以容纳上万人聚会。这里曾经举办过音乐会、巡游、体育庆典和政治集会。

### 周围土地利用模式

市政大楼周围的土地利用模式和其它五个案例类似，都是混合使用模式，目的是创造一个鲜活的受人欢迎的环境。市政厅就正好坐落在人们不同的活动场所的交点处，它连接了住宅区，金融区，政府机构区，和交易市场。

### 发展

市政厅位于一个叫斯科利广场社区的旧小区，此区曾经是一个破烂不堪的地方，尽管如此波士顿人还是很喜欢这里。在20世纪40年代和50年代之间，经济处于萎靡不振状况，当地政府想通过开发此地来振兴当地经济。此举遭到了许多波士顿人的反对，特别是市政府在开发过程中并没有咨询市民的意见。但是由于害怕四五十年代当地经济继续下滑，市政府还是按照执意开发以此作为从振当地经济的策略。

### 经验教训

从美国的审美观来看，市政厅广场项目并不成功。在炎热的夏季，该广场没有任何遮风避暑的去处，人们完全被暴露于酷暑之中。然而，广场连接了城市开发的不同节点，此种土地利用模式由此弥补了广场设计上的不足。

figure 10: City Hall plaza  
图 10：市政厅

figure 11: Land Use Plan  
图 1 1：土地利用图

## CASE STUDY TWO: MILWAUKEE, WISCONSIN, USA

### Introduction

Milwaukee is located in the midwestern United States in the state of Wisconsin. It is similar in both the location and size to Gaoming. The city of 580,000 is straddled by the Menomonee River to the east and a small canal to the west. The focus of the case is on an area that is very near to the canal—the location of City Hall and other civic institutions.

### Location

City Hall occupies a triangular parcel that sits symbolically and geographically at the center of the downtown area. There are three prominent areas that surround City Hall: East Town, West Town, and Park East.

East Town is a diverse neighborhood, with uses ranging from corporate offices to local restaurants. Cathedral Square and the River draw regional audiences through activities such as Jazz in the Park. The neighborhood is fostered by a residential community as well as commercial and employment establishments.

West Town offers concentrated, large-scale retail within the downtown area. Street trees, flowers, benches, banners and art enhance the streetscape.

Outdoor cafes predominate in this area, and balconies of upper-level residential units have premier views of river activity.

## 专题研究之二

### 美国威斯康辛州的密尔沃基市

#### 引言

密尔沃基市位于美国中西部的威斯康辛州，所处的地点和城市大小都和高明相似。Menomonee河在东边穿越了这座58万人口的城市，另一小河则在西边穿过。这个案例研究的焦点是靠近小河的一片区域：市政厅和其他民事机关所处的地段。

#### 位置所在

市政厅位于一个三角形地带，在象征意义上和地理上都是市中心。三个显著的区域围拢着市政厅：东镇，西镇，和园东。

东镇是一个多样化的社区，土地多样化。在教堂广场和河道举行的各种活动，譬如公园中的爵士乐表演，吸引着市民慕名而来。整个社区由住宅区、商业和办公区组成。

西镇在市中心地区内集中了大规模零售店。街道旁的树木、花草、长凳、横幅和艺术增强美化了街道。

室外咖啡厅是这里的主要特色。高层住宅的阳台为欣赏河景提供了最

## 在高明规划

好的角度。作为休闲娱乐中心，这里有多功能影院、宾馆和餐馆。

自2002年一条高架公路被拆除后，园东片区发生了显著的改变。这里现在的标志是一个表演艺术的中心、溜冰场、酒吧、餐馆和一个新的多功能电影/休闲综合中心。餐馆和室外咖啡厅均沿河而建。在河的西侧，开发呈现居住、办公和零售相结合的土地利用方式。

### 设计

密尔沃基的市政厅是1895年由H.C.Koch公司设计。多年来，它都是作为这个城市最高的大厦。设计是依据荷兰和比利时的艺术协会大厦为基础。为了适合三角形的地块，市政厅的设计为楔子式。建筑的顶部是有着响钟和时钟的塔冠。

设计和材料的使用均认真地考虑到吸引访客和强调这个地点的重要象征性。市政厅前种植高度比较低的植物和各色的花卉。前庭是市政厅的重要组成部分，而周边的设计和使用均衬托到其重要性。附近的地段通常被用来作为写字楼和零售。

### 周围的土地利用方式

市政厅周围的土地利用方式是多元化的，但主要还是商业用途。有一些居住用地和文化设施用地。需要再次强调的一点是：市政厅位于市中心的节点位置，并且为周边地区提供了一个多用途动态背景。

### 经验教训

与高明地理位置的相似性，密尔沃基是一个有趣的案件。两个城市均位于一条主要水路和一条次要水路之间。以市政厅为城市的背景，其大楼和所在位置被用作城市行政中心的象征并与其它的区域连接起来。高明可以借鉴如何赋予区域标志性意义的方式来处理其市政中心。

以设计作研究：设计和研究类型

An entertainment complex containing a multiplex cinema, restaurants and a hotel is also located here.

The Park East neighborhood has changed significantly since an elevated freeway was torn down in 2002. This neighborhood is now dominated by a Performing Arts Center, a skating rink, bars and restaurants and a new multiplex movie/entertainment complex. Restaurants and outdoor cafés flank the river. On the river's western edge development continues to provide a mixture of housing, offices, and retail.

### Program

Milwaukee's City Hall was designed in 1895 by H. C. Koch and Company and for many years was noted as the tallest building in the city. The design of the building is based on guild halls in Holland and Belgium. City Hall is wedged shape to fit the triangular parcel. The bell and clock tower top the structure.

Design and materials are carefully thought out to attract visitors and to emphasize the symbolic importance of this site. The median in front of City Hall is planted with low plants and colorful flowers. A forecourt is the predominant element of City Hall and the surrounding uses emphasize its importance through both design and use. These parcels have been in-filled with office and retail.

### Surrounding Land Use Patterns

The land use pattern surrounding the City Hall are diverse, but are primarily commercial uses. There are some residential as well as some cultural uses. Again, the site where City Hall is located is at the nexus of the downtown area and it is a backdrop for a dynamic integration of uses.

### Lessons Learned

Milwaukee is an interesting case because of the physical similarities with Gaoming. Both are located between a major waterway and a secondary waterway. Milwaukee has used the city hall as a backdrop for the city. The building and its location is imbued with a civic symbolism that brings together the rest of the city. Gaoming can learn from the ways in which Milwaukee has imaged the area.



*figure 12: Varied land use pattern*  
图 1 2 : 多种土地利用形式

*figure 15: Site plan*  
图 1 5 : 区域图

*figure 13: Calatrava Museum of Modern Art*  
图 1 3 : 卡拉特拉瓦所设计的现代艺术馆

*figure 14: City Hall*  
图 1 4 : 市政厅

*figure 16: Aerial plan*  
图 1 6 : 卫星图

## 在高明规划

### 专题研究之三： 西班牙的毕尔巴鄂市

#### 引言

毕尔巴鄂市是西班牙的海港和第六大城市。它位于在西班牙巴斯克地区的核心地带并且集中了地区的大部分经济活动。城市的人口大约是35万，而大都市区的人口约为一百万。在15年以前，这个城市是一个在衰退的工业中心。但是通过建设新的具有美学特色的建筑，这个城市近来成为欧洲其它地区“文化旅游客”的旅游胜地。

#### 位置所在

毕尔巴鄂市位于西班牙的沿海地带，Biscay海湾的内陆。城市由毕尔巴鄂河一分为二。河西的地区传统上是工业区，河东的地区是一个发展中的区域的以服务业为基础的中心。毕尔巴鄂的行政中心在离河250米的河东地区。在它的地理中心是Moyua广场，毗邻它的是市政厅。

毕尔巴鄂市的行政中心以传统的西班牙建筑学和材料为标志。这些与近代的建筑形成了鲜明的对比，近代建筑展现出完新的建筑风格和材料。对城市的经济和社会生计的更为重要的不是广场和周围的行政大楼，而是近来周边地区的高速发展。它们当中最引人注目的是由盖里设计的古根海姆艺术馆，位于市政厅北大约250米的河边。

#### 市政中心的功能

作为政府所在地和重要的旅游景点，毕尔巴鄂市的行政中心与地方艺术馆和传统建筑相结合，在西班牙其它新近发展的城市中是一个独特的地方。市政中心对大会、地方事件和活动等都具有相当的吸引力。

### CASE STUDY THREE: BILBAO, SPAIN

#### Introduction

Bilbao is Spain's sixth largest city and seaport. It is located in the heart of the Basque region in Spain, and accounts for the majority of the region's economic activity. The City's population is approximately 350,000 and its metropolitan area is approximately one million. As recently as fifteen years ago, the city was a declining industrial center, but with the installation of new aesthetically distinct architecture, the city has recently become a tourist destination for "culture tourists" from the rest of Europe.

#### Location

The city of Bilbao is on the coast of Spain, inland of the gulf of Biscay. The city is bisected by the Bilbao River. The area to the west is traditionally the industrial sector, the area to the east of the river is a growing service based economy hub for the region. The civic center of Bilbao lies 250 meters from the Bilbao river on the eastern side of the city. At its geographic center is the plaza Moyua and adjacent city hall.

The Bilbao civic center is marked by traditional Spanish architecture and materials, which lie in stark contrast to the more recent developments which display a completely new architectural style and materiality. Of more importance to the economic and social livelihood of the city is not the plaza and surrounding administrative buildings, but rather the recent high profile developments surrounding it, most notably among them the flamboyant Bilbao Guggenheim Museum designed by Frank Gehry, located approximately 250 meters north of the city hall on the river.

#### Function of Civic Center

Combined with the local museums and traditional architecture, the Bilbao civic center is a unique place among other newer developed cities in Spain as a huge tourist attraction as well as a seat of government. The civic center is an attractive venue for conventions as well as local events and attractions.

#### Economic Background and Development Strategy:

Traditionally a small Mediterranean town of fishermen, the city experienced a booming in its port activity and heavy industrials manufacturing sectors in the 1950s and 1960s. Changing

*figure 17: Bilbao tourist map* 图 1 7 : 毕尔巴鄂市旅游图

## 在高明规划

market conditions in the 1970s instigated a severe decline in the city's industrial base and population over the next twenty years. Between 1975 and 1996, Bilbao lost almost half of its manufacturing jobs.

In 1985, the city undertook many regulatory and policy approaches for city revitalization in response to the economic crisis. By the beginning of the 1990s, Bilbao had created a plan to revitalize the city which described three approaches to urban regeneration: spatially, strategically, and by developing large urban projects.

The plan first spatially mapped out former industrial and brownfield sites that the city felt presented opportunities for new redevelopment. The first site they noted was an abandoned 35-hectare inner port where the Guggenheim Museum now lies. After choosing the site, the city created a strategy to define Bilbao's future.

The next phase of defining the city was done through large-scale investment in infrastructure and transportation projects. This included the metro designed by the famous British architect Norman Foster, completed in 1995. This was followed by port extensions and other large infrastructural developments including an airport terminal designed by Calatrava. These image improving developments made way for the development of the Guggenheim museum, the establishment of which established Bilbao, a recently industrial city, as one of Europe's new cultural capitals.

While the Guggenheim Museum cost 1.27 billion dollars (10.8 billion yuan), during the first year, government estimates showed that the museum was responsible for \$210 million in increased economic activity in the region, of which \$30 million was claimed by the government in taxes. The museum also adds value to the pre-existing museums and cultural sights in the civic center by creating further tourist and local draw to the area.

*figure 18: The new city development*

图 1 8 : 新的城市发展

*figure 19: The same brownfield after redevelopment*

图 1 9 : 荒地开发之后

*figure 20: The old city*

图 2 0 : 旧城区



经济背景和发展战略：

历史上作为一个地中海的渔业小镇，毕尔巴鄂市在20世纪50到60年代经历了港口和重工业的兴旺发展。70年代市场条件的改变导致了城市的工业基础和人口在接下来的两个世纪里严重衰退。在1975年和1996年之间，毕尔巴鄂几乎丢失了其制造业一半的工作。

1985年，城市采取了许多管理和政策的方法来推动城市复兴以应付经济危机。到90年代初，毕尔巴鄂推出了一个规划来复兴城市。这一规划描述了城市复兴的三种途径：空间复兴、战略复兴、和通过开发大型城市项目来复兴。

规划首先在空间上勾画出城市认为有新开发机会的前工业用地和废弃土地。他们所选的第一块用地是一个被摒弃的35公顷内港，也就是今天古根海姆艺术馆的所在地。在选择了这个地点以后，城市拟定了一个战略来为毕尔巴鄂的未来定位。

为城市定位的下一个阶段是对基础设施和交通项目进行大规模的投资。这包括在1995年完工的由著名英国的建筑师福斯特设计的地铁。这一工程之后是港口的扩展工程和其它一些大型基础设施项目，包括由卡拉特拉瓦所设计的航站楼。这些改善城市形象的工程促成了古根海姆艺术馆的建成。此艺术馆使得一个衰退的工业城市成为欧洲新的文化首都之一。

虽然古根海姆艺术馆耗资12.7亿美元(约合108亿人民币)，在第一年，政府估计博物馆使得区域的经济活动增加了2.1亿美元，其中3000万美元为政府税收。因为吸引了更多的游客，古根海姆艺术馆也帮助增加了现有博物馆和文化景点的价值。

*figure 21: Aerial of the city and river*

图 2 1：毕尔巴鄂市和其河流鸟瞰

*figure 22: Location of Bilbao in relation with Spain*

图 2 2：毕尔巴鄂市在西班牙的位置图

### CASE STUDY FOUR: SHATIN, HONG KONG, CHINA

#### Context

Sha Tin is one of the three new towns developed in 1973 in Hong Kong to alleviate pressure on housing in its urban areas. After about thirty years of development, Sha Tin's population reached 628,634 in 2001 within its jurisdiction of 69.2 square kilometers. Surrounded by steep mountain ranges more than 300 meters above the sea level on three sides, and with Tolo Harbor in the northeast, most of the development in Sha Tin is clustered and situated on narrow strips of flat land along the Shing Mun River. With a density of 9,082 people per square kilometer in 2001, Sha Tin is one of the most densely inhabited new towns in Hong Kong.

### 专题研究之四： 中国香港的沙田

#### 背景

沙田是香港在1973年为了减轻城区住房压力而开发的三个新城之一。经过大约三十年的发展以后，在其69.2平方公里行政范围内，沙田的人口在2001年达到了628,634。三面由海拔300米以上的陡峭的山脉环绕，东北是吐露海湾，沙田绝大多数的开发都集聚在沿城门河一带狭长的平地。人口密度在2001年是9,082人每平方公里，为香港居住密度最高的新城之一。

*figure 23: Sha Tin is one of the new town systems developed by the Hong Kong government in 1970s.*

图23：沙田是香港政府自70年代以来所兴建的一系列新城中的一个。

### Programs and Events

The vibrant life at the urban core of the town is attributed to its design features as well as to the events happening there. The Town Centre is composed of a various functions of facilities, including civic/cultural, commercial flagship, entertainment, as well as residential clusters. These various structures and programs offer abundant opportunities for different events to serve different constituents throughout the year.

Civic and cultural buildings are one of the major components for the identity of the Town Centre. Looking upward from the Shing Mun River bank, the cardinal orange color of Sha Tin Town Hall dominates the heart of the Town Centre. With more than 1,500 seats, it is the central facility for performing arts in the Sha Tin area and eastern New Territories. Situated on the same elevated limestone plaza is the Sha Tin Central Library, which is similar to the Town Hall, with its modernist style and color scheme. These two modern cultural institutions form the core civic functions of the Town Centre. The Town Centre Plaza is one of the most popular leisure places for local residents as it is surrounded by cultural, commercial, as well as government offices and housing. As the Sha Tin government registrar office is also located on the plaza, the staircase leading from the scenic Sha Tin Park to the plaza is a frequent spot for shooting wedding pictures after the registration ceremony. The convergence of public and private activities in the Town Centre Plaza and the cultural and civic structures truly bring vibrant civic life to Sha Tin.

Several government buildings, including administrative and court functions, are scattered around these two cultural anchors. In order to reinforce the civic center as a cultural hub, several cultural institutions at the peripheral of the Town Centre are also incorporated. Hong Kong Heritage Museum opened its doors in 2000. The five-storey design is largely inspired by traditional Chinese court-yard architecture, with a terra cotta color scheme similar to the Town Hall and Central Library within a walking distance. On the other bank of the Shing Mun River are two indigenous cultural structures that have witnessed the rapid changes of the area in the past thirty years. Across the foot bridge over the Shing Mun River is Che Kung Temple in memory of the legendary patriot Che Kung, whom was regarded by the locals as the area's guardian. Within walking distance to the east is Tsang Tai Uk, the biggest and most well-preserved

*figure 24: Sha Tin was a place with farms and scattered villages before 1970s. Shing Mun River had serious water quality and sediment problems.*

图24: 七十年代前的沙田主要是农田和零星散布的村庄。城门河有严重的水质和沉积物问题。

*figure 25: (next page) Key establishments in Sha Tin civic center area*

图25: (下页)沙田市政中心主要建筑物

### 活动

充满生气市政中心归功于它的设计特点和在那里所举办的活动。市中心的组成包括具有各种功能的设施，如市政/文化、商业旗舰、娱乐和住宅区。这些多元的设施一年四季都为不同社群的活动提供了活动场所和机会。

市政和文化建筑是构成市政中心定位的重要组成部分。从城门河岸向上看，市政厅的橙色是镇中心核心地带的主题色调。这个拥有超过1500座位的中心是沙田和东部新区表演艺术的中心设施。沙田中心图书馆也位于的广场，有着和市政厅相似的现代派的式样和色彩设计。这两个现代文化机构形成了镇中心的核心市政功能。由于四周是文化、商业和政府机构，市中心广场是当地居民最常来的休闲场所之一。由于沙田政府的登记处也在广场旁，从风景秀丽的沙田公园到广场的台阶上常常会有刚刚进行了婚姻注册仪式的伴侣在照相。在周边的文化和市政建筑的衬托下，公共活动和私人活动在市中心广场融会在一起，给沙田带来了充满活力的民众生活。

几个政府大楼，包括行政和法院功能，散布在这两个文化中心周围。为了加强市中心作为一个文化核心的功能，几个文化设施也分布在市中心的边缘。2000年香港文化博物馆正式开放。五层楼的设计在很大程度上是吸收到中国传统庭院建筑的启发，陶红色的色调与位于步行距离内的市政厅和中央图书馆的色彩很相似。在城门河的对岸是两个原有的文化设施，它们见证了这一地区在过去30年的快速变迁。跨过城门河上的步行桥便来到纪念传说中的车公庙，供奉着当地的守护神。向东步行几分钟是曾大屋，是香港最大、保存最好的客家围屋建筑。这个历史性的灰色砖建筑一百五

walled Hakka dwelling complex in Hong Kong. The original gray-brick structure with five courtyards around the central ancestral hall has been continuously inhabited for more than 150 years. Although it has become a cultural icon for visitors, Tsang Tai Uk is still occupied as a housing complex with very few alterations to its original Hakka vernacular architecture. The animated civic life in the Town Centre is thus sustained by a mixture of both modern and traditional cultural activities as well as government functions.

The green and open space system centered around the Town Centre further highlights its importance in the civic life of the residents of Sha Tin. The eight-hectare Sha Tin Park provides numerous options for different users, such as Tai Chi practitioners, bird-watching enthusiasts, children and toddlers at the playground, or simply couples taking a morning walk or evening jog. Linking the Sha Tin Park and the two other regional parks in the area is an extensive network bike paths and trails, totaling 50 kilometers. These bike paths and trails radiate out from the Town Centre, penetrating through regional parks, crossing over the River, touching community open spaces, and reaching up to the hills. The green strips along the banks of Shing Mun River offer shades from the tropical sunshine for chatters, pedestrians, joggers, as well as cyclists.

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© Hong Kong Leisure Cultural Services Department



figure 26: Some of the major cultural institutions and events in Sha Tin civic center fulfilling different people's interests, this page, from top to bottom: Sha Tin Town Hall and public library; Che Kung Temple; annual dragon boat race on Shing Mun River. Next page, from top to bottom: Hong Kong Heritage Museum; Tsang Tai Uk; Chinese garden in Sha Tin Park; and Snoopy's World (figure 27)

图26：沙田市政中心的数个主要文化单位满足不同人群的兴趣，本页，由上自下：沙田大会堂和公共图书馆；车公庙；每年一度在城门河上的龙舟比赛。下页，又上至下：香港文化博物馆；曾大屋；沙田公园中的中式花园；史诺比开心世界。

十年以来一直有人居住。五个庭院将祖宗祠堂环绕在中央。虽然已经成为了旅游景点，但曾大屋现今仍然是一个住宅群落，并且在原有的建筑上改动极小。沙田市中心生气蓬勃的民众生活由现代、传统的文化活动和政府功能共同组成。

集中在市中心的绿色开放空间系统进一步突出它在沙田居民生活中的重要性。八公顷的沙田公园为不同的使用者提供了多种选择，譬如太极练习者、弄鸟人、操场上的小孩或仅仅是清晨或傍晚散步的夫妇。连接沙田公园和这一地域的两个其它地方公园的是一个由自行车道和步行道构成的延伸网络，总计50公里。这些自行车道和步行道从市中心放射性向外展开，穿越地方公园，横跨河流，连接社区露天场所，直到进入山中。沿城门河岸的绿化带为闲聊、晨运、慢跑和骑自行车的人在热带阳光中提供了庇荫的场所。

## CASE STUDY FIVE: PROVIDENCE, RHODE ISLAND, USA

### Introduction

Providence the capital of Rhode Island, is located in the New England region with a history dating back to 1636. It is situated at the head of Narragansett Bay, the second largest estuary on the East Coast. Despite its small size of 18 square miles, its density in 2000 (9,401 persons/mile<sup>2</sup>) is three times as dense as major metropolises like Atlanta (3,161 persons/mile<sup>2</sup>). After suffering from cycles of economic recessions, its median household income soared to \$42,090 in 1999, higher than most cities with a comparable size. Many of the recent growth have been attributed to the city's successful revitalization in its civic center.

*figure 32: Location of Providence and its civic Center.*

图32: 普罗维登斯和它的市政中心的位置

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## 专题研究之五： 美国罗德岛州的普罗维顿斯

### 引言

罗德岛州的首都普罗维顿斯位于新英格兰地区，其历史可追述到1636年。它位于Narragansett海湾的顶端，是东海岸的第二大出海口。尽管它的面积只有18平方英里，它2000年的人口密度(9,401人每平方英里)是象亚特兰大(3,161人每平方英里)这样大都市的三倍。在度过了经济衰退的周期以后，它的家庭收入中位数在1999年猛涨到42,090美元，比大多数同等规模的

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## 在高明规划

As the backbone of the civic center, the Providence River has been largely ignored in the past. Office buildings were built on top of the river, while a huge portion of it was covered up by surface parking lots as well as bridges. After a continuous effort to revitalize since the 1970s through several plans, one of the major milestones in the Renaissance effort is its exceptional task of relocating the human-made confluence of the Woonasquatucket and Moshassuck Rivers, including uncovering two-thirds of a mile of the rivers. The relocation of the Providence River helped the locals to rediscover the civic center's history as well its potential for the future. The relocation is only the stimulant for a sequence of major redevelopment projects that jointly contributed to the Renaissance era of Providence:

- Developed miles of promenade linking newly built and existing small parks and plazas;
- Constructed twelve new bridges, restoring historical pedestrian links among historical College Hill, downtown historical districts, and Capital Center;
- Relocated rail tracks with new below-grade alignments;
- Established a new train station in the civic center above the underground track alignments;
- Relocated the World War I monument from a problematic and isolated traffic roundabout to the newly created Memorial Park by the waterfront;
- Created a new WaterPlace Park as a central node along the riverfront, surrounded by local restaurants, amphitheatre, fountains, boat landing and multiple pedestrian connections (a total of 11 acres of new open space consisting of rivers, riverwalk and parks);

城市都高。许多最近的发展都归功于城市对中心区的成功改造。

作为城市的骨架，普罗维顿斯河在过去基本上被忽略了。办公楼修建在了河上，河面相当大的一部分被它的表面停车场和桥梁所掩盖。70年代以来，几个规划项目不断地为这个城市的复兴而努力。其中一个改建努力里程碑是对人造的Woonasquatucket河和Moshassuck河的汇流处进行改道，这包括重新开挖2/3英里的河段。普罗维顿斯河的改道使得当地能够重新发现市政中心的历史河未来的发展潜力。河流的人工改道是激发了此后一系列大型项目，普罗维顿斯进入到了重建时代。

- 开发了数英里的步行道连接新建的和原有的小公园和广场；
- 修建了十二座新桥梁，在具有历史意义的学院山、市中心历史保护区和州议会中心之间恢复历史上就有的连接步行径；
- 将铁路轨道迁到地下；
- 在市政中心的地下轨道上新建了一个火车站；
- 将一战纪念塔从一个有问题的孤立交通环岛迁到了沿河新建的纪念公园；
- 新建了一个滨江公园以作为沿河地带的中央节点，四周围绕

*figure 34: The identity of Providence's civic center is given by both physical redevelopment and series of cultural events.*

图34：环境的再发展和一系列的文化活动给予了普罗维登斯市政中心新的特征

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© WaterFire Providence

© RIDOT

© WaterFire Providence

*figure 35: (Top pair) The WWI Memorial Monument was located at an isolated traffic circle (left, early 1990s). It was relocated later along the riverfront two blocks down, and Providence River was uncovered (right).*

*(Bottom pair) Waterplace Park and the riverwalks were built from the rubble of the past.*

图35：（上面一对图片）一战纪念碑在90年代之前是坐落于一个隔离的交通圈上。此纪念碑后来被从新安置在江边，而被覆盖的普罗维登斯河也得以从见天日。

（下面一对图片）Waterplace河滨公园和江边散步径在旧日的废墟中被重建

*figure 36: Various plans for revitalizing Providence's civic center.*

图36：普罗维登斯市政中心不同的再发展计划

© W.D. Warner Architects and Planners

## 在精明规划

- Constructed three docking sites for boat traffic;
- Realigned downtown arterials connecting to the new Memorial Boulevard, and connected local roads that serve the Capital Center district;
- Added an interstate highway interchange between a previously dead-ended belt highway in civic center and Memorial Boulevard.

After ten years since the inception of the relocation of Providence River, the current day civic center is a vibrant community focal point with mixed uses, including residential, office, commercial, educational, civic, as well transportation hub. In addition, there are two design issues that deserve further discussion:

### Small and diverse urban cultural spaces

Learning from the devastated past of extinguishing the civic center's attractiveness by putting huge lifeless parking lots there, Providence specifically wanted small and diverse urban cultural spaces in the redeveloped area. These small urban spaces were also deliberately designed to subtly theme the local aspects of its railroad and waterfront history. Light poles, stone railing carvings, landscaping, street furniture, tree gates, signage and historical interpretation panels offer variety of ways for people to learn about the place and rediscover its identity. Newly constructed bridges were designed and detailed with ceramic tiles depicting historical maps, photos, and exhibits of a theme consistent with historical location and importance.

餐馆、剧院、喷泉、码头和多种步行径（共计11英亩的开放空间由河流、河边小道和公园组成）；

- 修建了三个码头供游船停靠；
- 重新规划了市中心的主干道连接新的纪念大道，以及通向议会中心区的道路；
- 在原先的终止于市政中心的高速公路和纪念大道之间增加了州际高速公路的入口；

在开始普罗维顿斯河改道工程十年以后，今天的市政中心是一个充满活力的综合性社区，成为住宅、办公、商务、教育、行政和运输枢纽。此外，两个设计问题值得进一步讨论：

### 小型多元化都市文化空间

以往普罗维顿斯将大型死寂的停车场安置在市中心，扼杀了它吸引力。在吸取这个悲惨教训后，普罗维顿斯特别着重要在市政中心再发展地区创造小型多元化的都市文化空间。这些小的空间都刻意巧妙而低调地突出当地的铁路和水滨历史。街灯、石栏杆雕刻、植被、街

*figure 38: Satellite images of the civic center area in 1952, 1982 (facing page) and 2002. Notice the relocations of rail tracks and the river, the addition of the freeway, and the changes of buildings in the area.*

图38：1952，1982（对页）和2002年市政中心的卫星照。留意铁轨和江河道的搬迁，新加建的高速公路，以及由此引起的周边的变化。

*figure 39: Bird's-eye-view of the civic center (2002) after major redevelopment efforts.*

图39：经过主要再发展工程后市政中心的鸟瞰图

*figure 40: General land uses in the Capital District after the completion of the railroad and river relocation projects, 2003.*

图40：在铁轨和河道迁移工程后州府区的土地使用概况

### **Design culture and preservation ethic**

The designs of various cultural elements in the civic center are intended to faithfully reflect its proud history of a port town and a rail road hub rather than replicating extravagant structures that were not genuine to the local culture or history. Historical themes are part of the details along the riverwalk, suggesting the eras of the railroad and steamboat. The cultural history of Providence is carefully told and illustrated mostly through preservation and newly created subtle cultural spaces, but never conveying a sense of artificiality to create a false memory of the place's past.

### **A diverse water culture as a new identity**

The identity of Providence is not only created by its physical environment, but also a collective culture that people cherish, build, and improve together. For instance, the WaterFire, a one-time art installation by Barnaby Evans that turned into a regular festival ritual, has become one of the hallmark cultural identities of Providence. The event has evolved to now become a haunting blend of eclectic and powerful music, bonfires along the waterfront, water and its fronts, street theaters, and hundreds of intrigued participants. The sparkling bonfires, the fragrant scent of aromatic wood smoke, the flickering firelight on the arched bridge, the silhouettes of the fire-tenders passing by the flame, the torch-lit vessels traveling down the river, and other factors help reconnect Providence's citizen to rebuild its cultural connection with the River. Other art and cultural happenings scattered along the river further add diverse dimensions to the recreation of its local culture along the riverfront.

The annual Convergence Art Festival acquires and places local art work through out the civic center area for public display. These art pieces are returned to the artists after a year on loan, and the event organizer searches for another round of art pieces. Free summer concerts are also organized to celebrate the conclusion of the old display cycle and to introduce the new ones. The importance of such ceremony has become more and more prominent as it continues to attract a culturally and ethnically diverse group of participants with sundry art tastes. In addition, Shakespeare in the Park is another popular event that provides free Shakespeare plays at the WaterPlace amphitheater.

道椅凳、树围栏、街标和历史解说牌都帮助人们从不同角度去认识它的过去和从新发掘它的未来形象。新建的桥梁特别设计和融合了带有历史地图细节和图片的瓦片，展示了跟当地历史性和重要性相吻合的主题。

### **设计文化和历史保护伦理**

市政中心设计中的不同文化元素均致力于忠诚反映本地港口和铁路中心的光辉过去，而并非尝试刻意带入不忠于本地文化历史的大型豪华设计。历史主题贯穿江边行人径的设计细节，提醒人们过于了的铁路和蒸汽船时代。普罗维顿斯的文化历史都是通过古建保护和新的小型文化空间谨慎地真实反映其历史过去。它的设计并没有通过刻意做作来制造这个地方的虚假过去。

### **多元水文化作为新的城市形象**

普罗维顿斯的形象塑造不单单是通过环境的改造来达到，而是通过一种人们共同珍惜、建立和提高的集体文化所缔造。例如“水火”，一个由艺术家Barnaby Evans所开始的单次艺术活动渐渐演变成常规的节日庆典，最终成为普罗维顿斯的一个重要文化活动。“水火”现在已经发展成为一个包括多种音乐会、水滨营火、街道戏院和有数千人参加的活动。烈焰的营火、芬香的焰烟、拱桥上的投影、透过火焰隐约见到的人群背影、河上带有火炬的船只等把普罗维顿斯的市民重新带回到了来河边。其他在河岸不同地方举行的文化活动也为当地的河滨文化提供了多个侧面。

年度艺术集会将当地艺术家的作品放置在市政中心不同的地方展览。艺术作品将在一年后交还给艺术家们，然后艺术集会将再搜寻其他作品。免费音乐会也将在新旧作品交接的时候举行，以示庆祝。这样的庆祝活动因为吸引着越来越多不同

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*figure 44: The Renaissance of the civic center is not just about the redevelopment of the physical environment, but it is also about the (re-)inventions of a wide range of cultural activities. Prometheia in the civic center area.*

图44: 市政中心的复兴不单单依靠环境的再造, 也依赖一系列广泛的文化活动的再生。图为在市政中心举行的Prometheia活动。

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*figure45: Ballroom Dance at the Sovereign Plaza.*

图45: 在独立广场进行的交谊舞交流

*figure 46: The success of WaterFire requires the public's engagement. Volunteers lighting up the bonfire (below). New WWI Memorial Park by the water during WaterFire. (Right)*

图46: “水火”(WaterFire)文化活动的成功需要大众的参与。义工点燃“水火”活动的篝火(下图)。在江边从新建造的一战纪念公园(右图)

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## 在高明规划

The physical environment of the civic center only creates half of the collective memory of the place, and the other half relies on these cultural events, whether historical or modern, bringing together people to create a shared experience resonating within each and every soul of the place. It is only then that the identity of the diverse water culture of a place emerges.

族裔和艺术品位的人来参加而变得更为重要。此外，在莎士比亚园活动期间，不同的莎士比亚剧目也会在水滨扇形剧场免费公演。

市政中心的环境仅仅创造了一个地方的集体记忆的一部分，而记忆的其他部分是由这些历史和现代的文化活动所共同组成。这些活动把这个地方的人们带到了一起，制造了在他们每一个人的脑海中都可以产生共鸣的共同经验。只有这样，一个崭新的多元水文化才会在这个地方出现。

*figure 47: The Renaissance at Providence's civic center is created by both physical redevelopment and a diverse cultural events that collectively remade the shared memory and history of this place and its people.*

图47：普罗维顿斯市政中心的复兴归功于环境的再发展和一系列不同的文化活动。新的环境和文化活动一齐再造了这个地方和人民的共同记忆和历史。

## EXPLORING CULTURAL GEOMETRIES

### 探索文化几何

Gaoming is popularly known as the “Pearl of West River” because of its natural environment and the scenic beauties. The city’s cultural pattern has evolved from this environments, as well as from an active public participation.

因为它的自然环境和如画的美丽风景，高明也被称为“西江明珠”。这个城市的文化格调源自于它的环境和积极活跃的公众参与。

These existing cultural events and rituals can provide clues to planning and urban design solutions. By incorporating cultural elements in the development process, the planners can actively build opportunities for active urban spaces. Cultural, artistic, and heritage districts can enhance the urban experience by creating civic destinations. These areas build community identities, as well as economic growth.

这些现有的文化状况和习惯能为规划和城市设计方案提供线索。通过在发展过程中合并文化元素，规划师可以积极地为城市空间制造机会。文化的、艺术的和传统的区域可以通过创造文化基地来丰富城市体验。这些地区创造了社会的特性和经济增长。

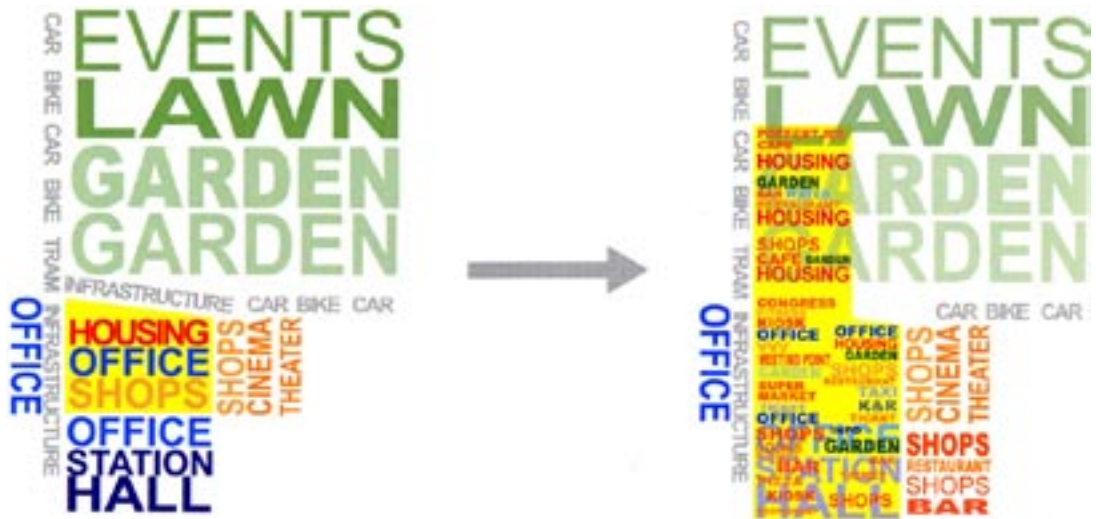


figure 1: City Infrastructure and Facilities 图 1：城市基础设施

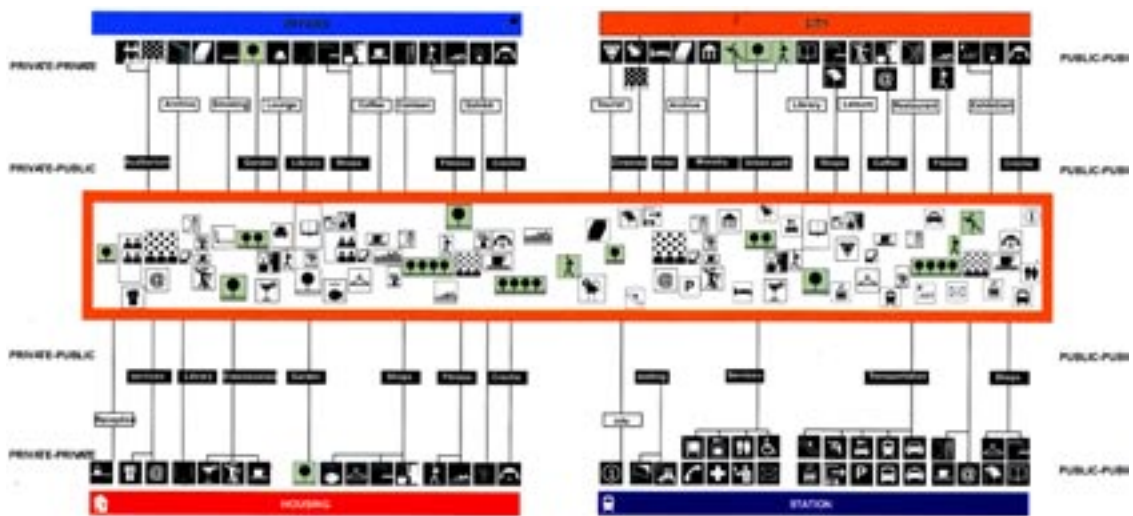


figure 2: Public Amenities and Recreational Attributes 图 2：公共娱乐和其他因素

### Developing Cultural tourism for the city Gaoming

The focus on cultural tourism can bring together many different professional disciplines. Urban planners, preservationists, tourism managers, as well as municipal authorities need to coinmate and work together to build a culturally sensitive city.

- Stimulate partnerships for an effective source of mobilization and investment at an national and local level;
- Enlist the participation of many community organizations;
- Focus upon capacity development and strengthen local institutions.

为高明发展文化旅游

着重文化旅游可以汇聚很多不同种类的专业学科。城市规划师、古建筑保护人士、观光事业经理人和地区权威人士需要调整并且共同合作来建立一个有文化气息的城市。

- 为了更有效地获得投资资源，鼓励在国家和地区范围上的合作伙伴关系
- 鼓励不同社会组织的共同参与
- 着重于能力发展和加强地区制度





figure 3:Gaoming- Reflecting Nature, Source- Author



figure 4:Gaoming- Laying Environmental Grids for the City, Source- Author

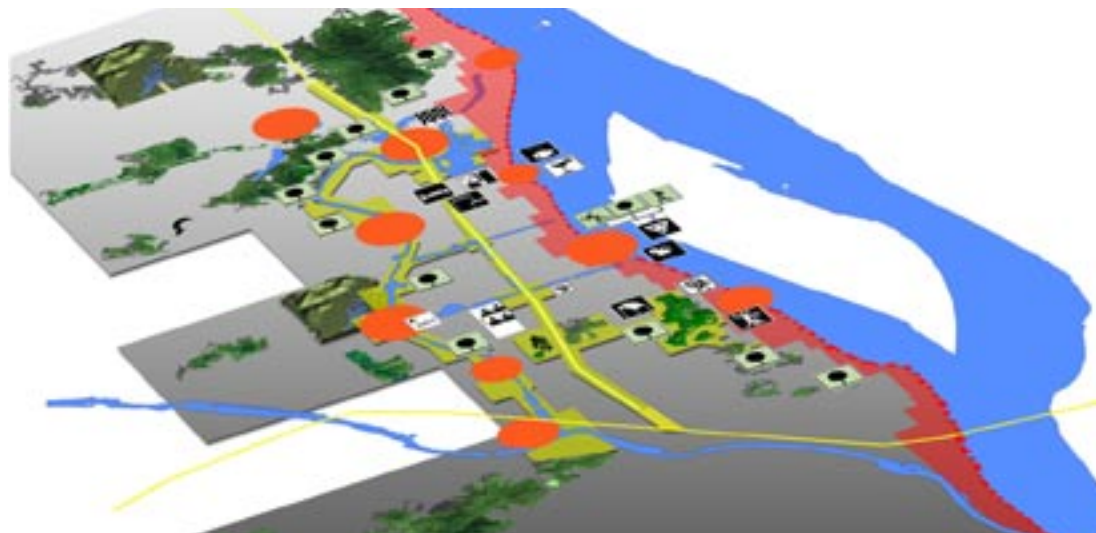


figure 5:Gaoming-Mapping Culture nodes of the City, Source- Author

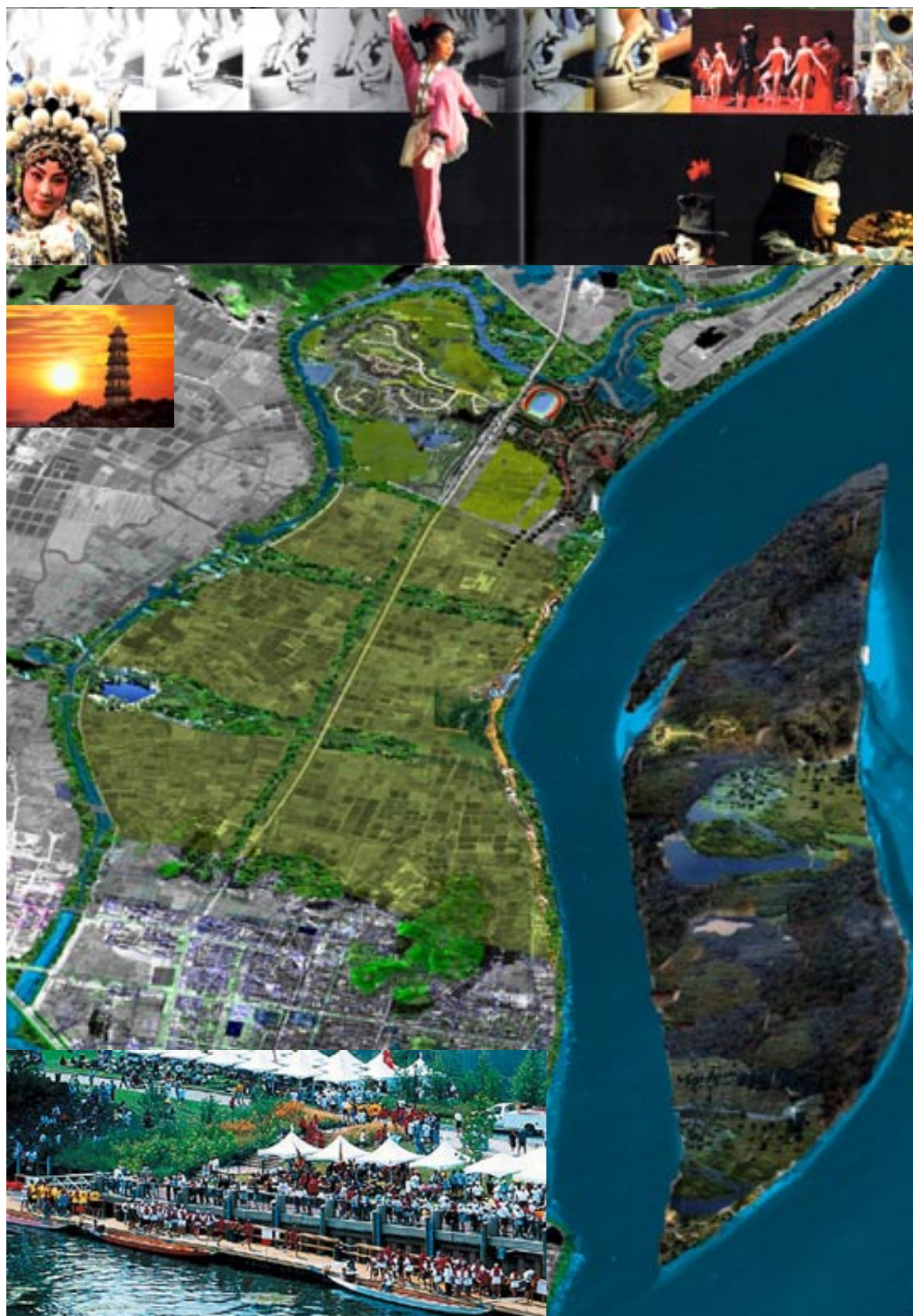


figure 6: Greening Gaoming- Exploring Ecological zones, Source- Author



figure 7: Gaoming- Design and Water Culture

The following projects utilize maximum “green” surface areas with terraces or hard landscapes. The incorporation of ecological characteristic are prevalent throughout design. These projects were developed as part of the “Planning Frameworks” section of the studio.

后面的项目利用最大程度的“绿色”表面区域、阶梯式或者硬环境。生态特征的结合普遍地贯穿设计。这些项目发展成为工作组的“规划框架”的一部分。



figure 8: Gaoming- Reflecting River Front- Green Strategies for Eco-Polis Costruction

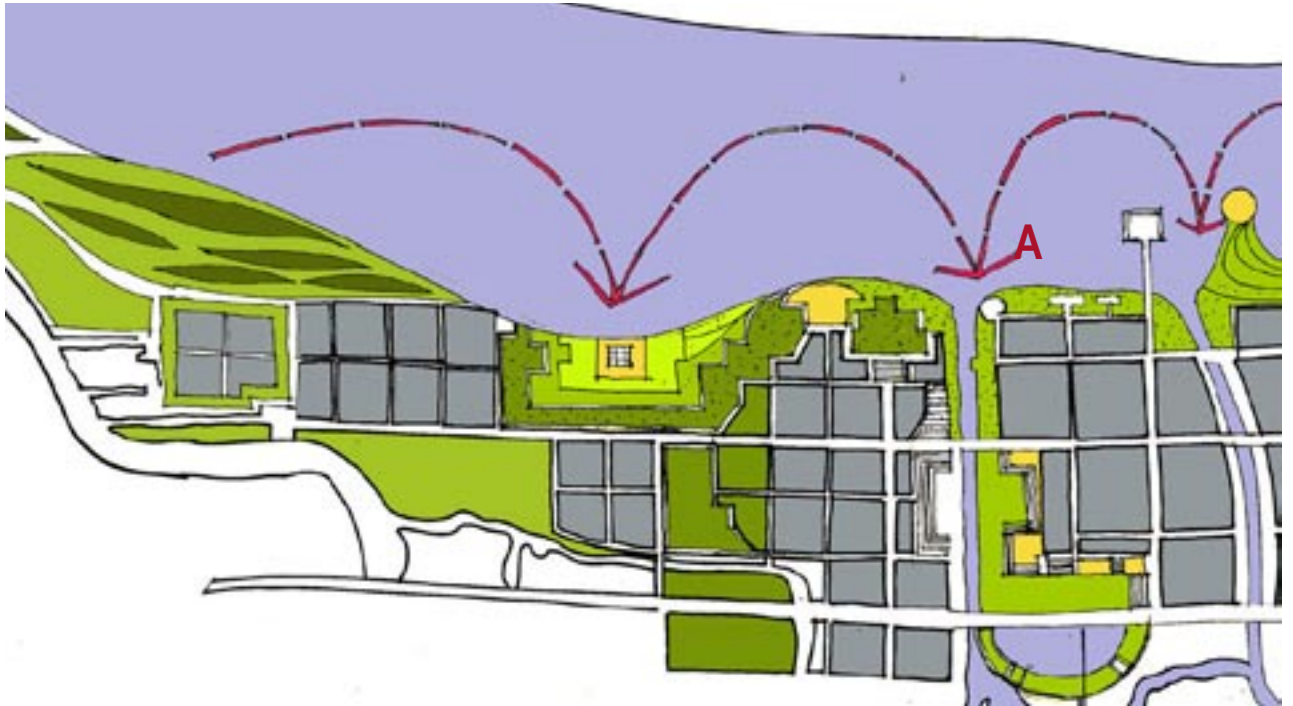


figure 9: Culture Corridor Reflecting River Front, Inland Waterways, Source- Network City

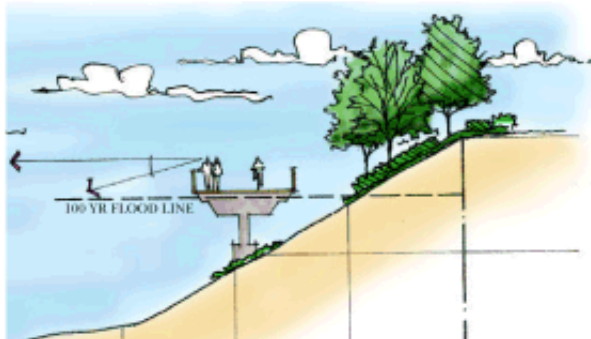


figure 10: Section at A

### River Edge Development

Due to the large range of river water levels, the sectionally-driven design strategy allows for an efficient interaction between water edge and the built form.

### 河沿岸发展

由于河水的潮退大，注重截面关系的设计战略可以营造建筑与水边更加有效的互动



figure 11: Section at B



figure 12: Culture Corridor Reflecting River Front, Source- Authors

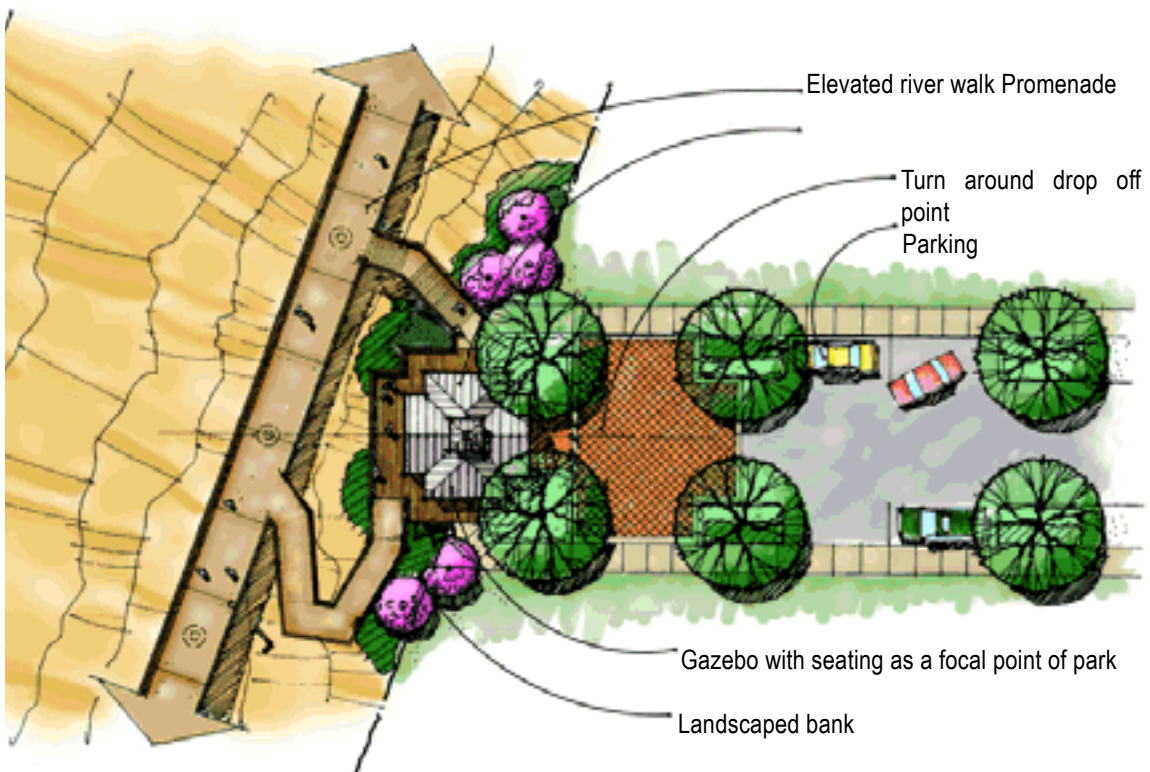


figure 13: Detail Plan at B

## 在高明规划

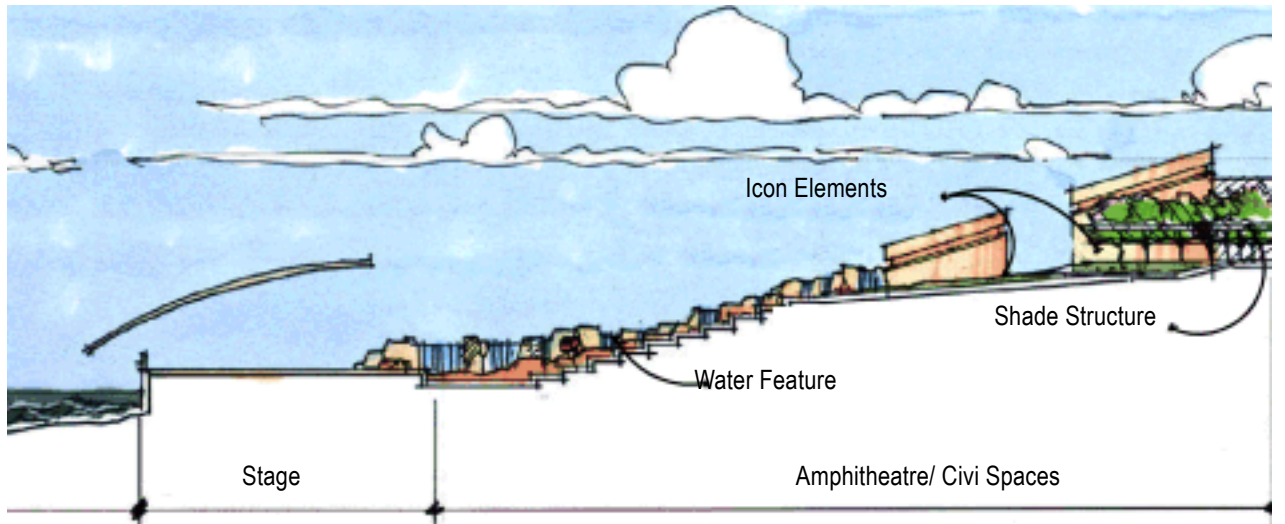


figure 14: Section at C

### Urban design moves :

- Relocate the open areas to the riverfront in order to encourage interaction with open space.
- Provide accesibility to the the West River
- Create the unique city landscape to strengthen the image of Gaoming.
- A combination of public plazas, open courts, stages, open air theaters, and iconic buildings can enhance the cultural and civic zones to build a culturally diverse Gaoming.

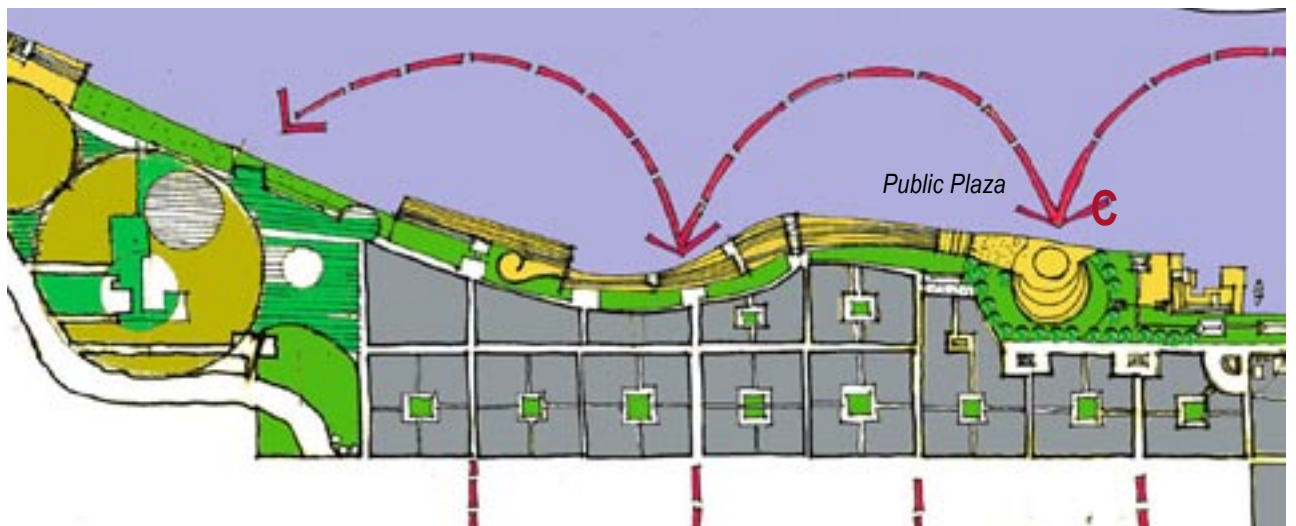
### 城市设计步骤

-为了鼓励与户外空间的相互配合，重新布置河边地区的户外地带

-提供可到达西江的途径

-创造城市独特的风景来加强高明的形象

-公共广场、户外庭院、阶梯、露天剧院和标志性楼房的结合可以加强文化区域，从而建立一个有文化多样化的高明



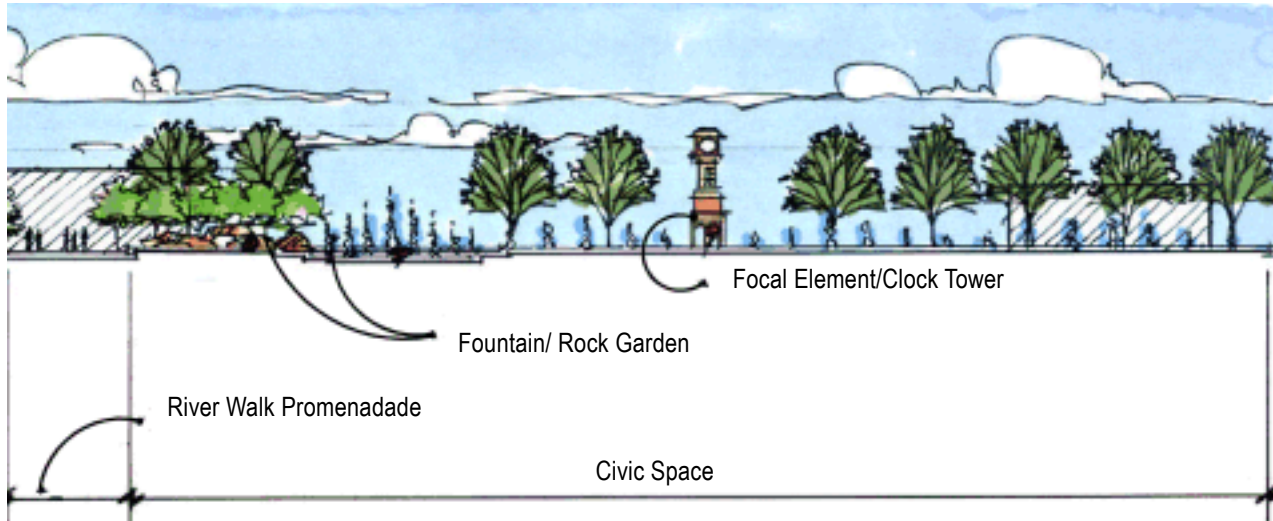


figure 15: Ecological gardens



figure 16: Culture Corridor Reflecting River Front, High Density along River Edge, Source- Maturing City

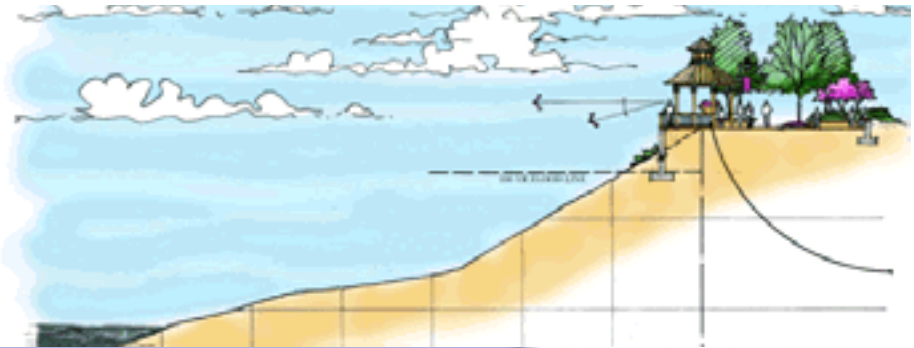


figure 17: Section at D

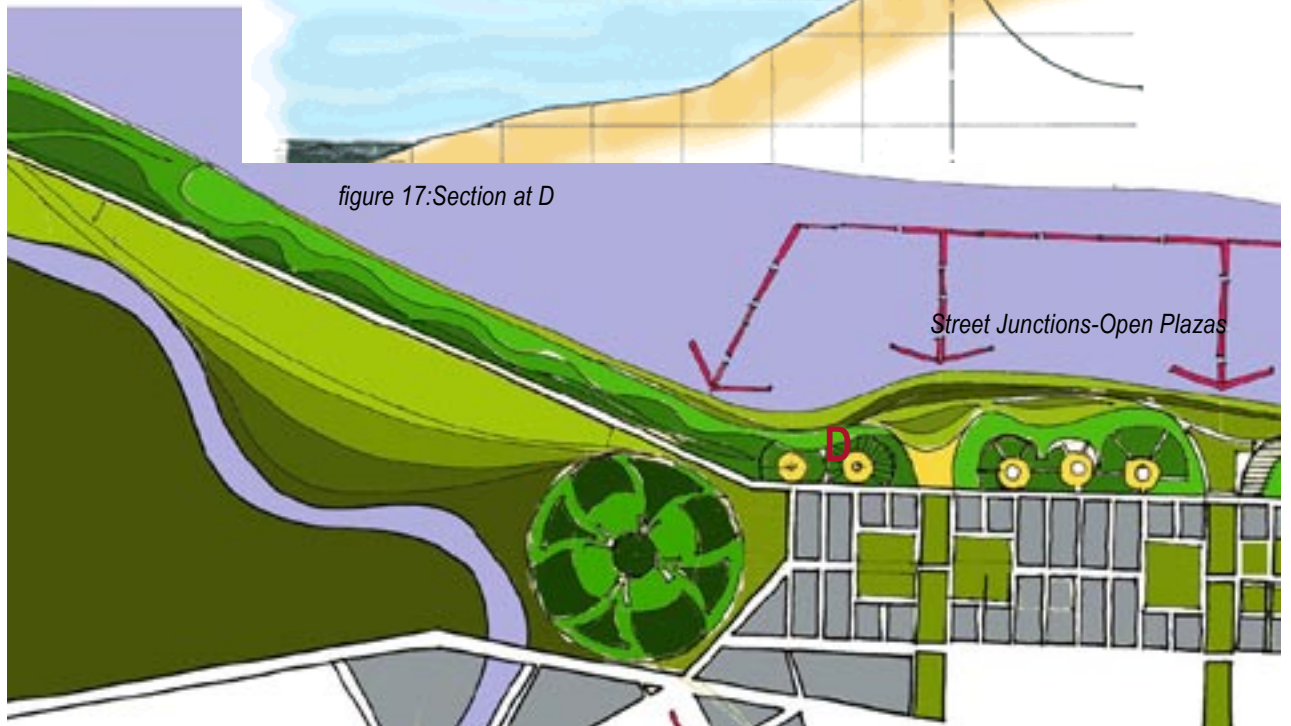


figure 18: Culture Corridor Reflecting River Front, High Density along River Edge, Source- Re-Building the Urban Canal

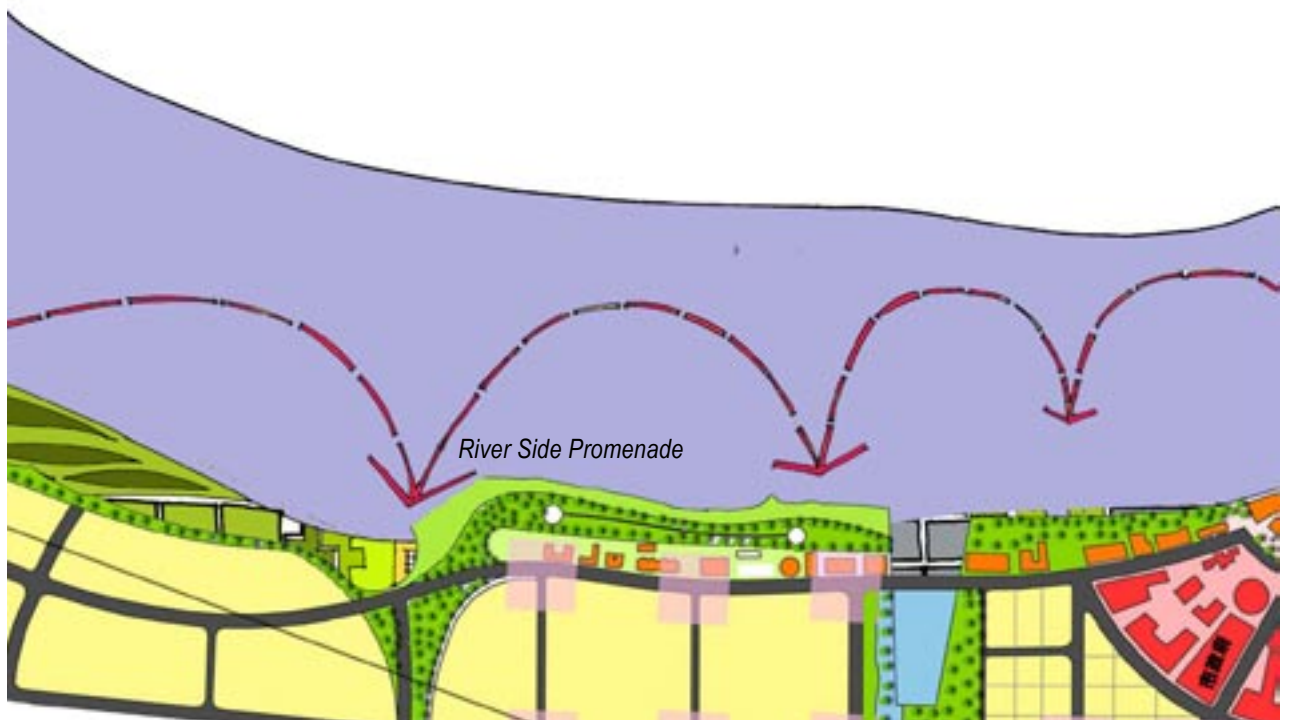


figure 19: Culture Corridor Reflecting River Front, Cultural Nodes along the River Edge, Source- Greening Gaoming



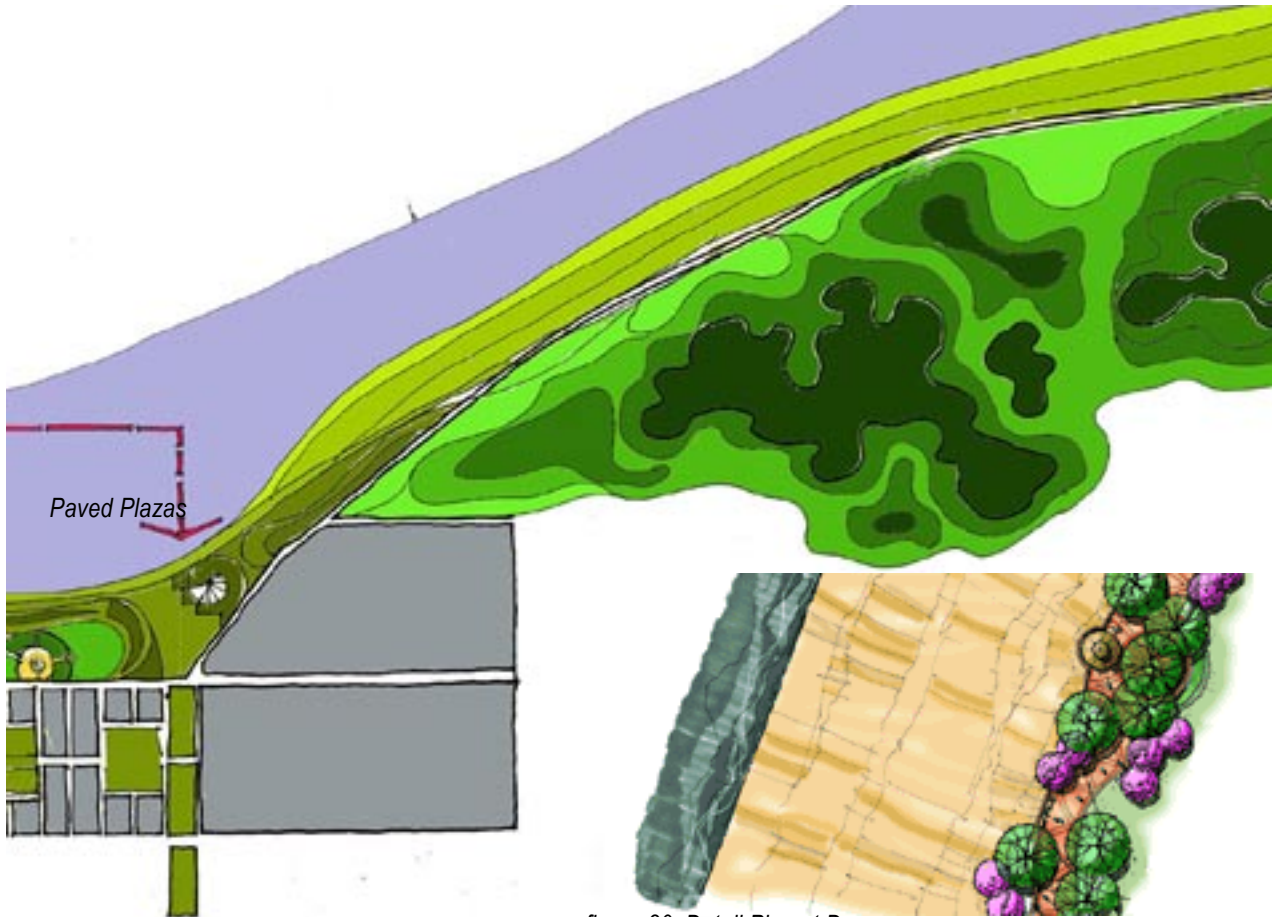
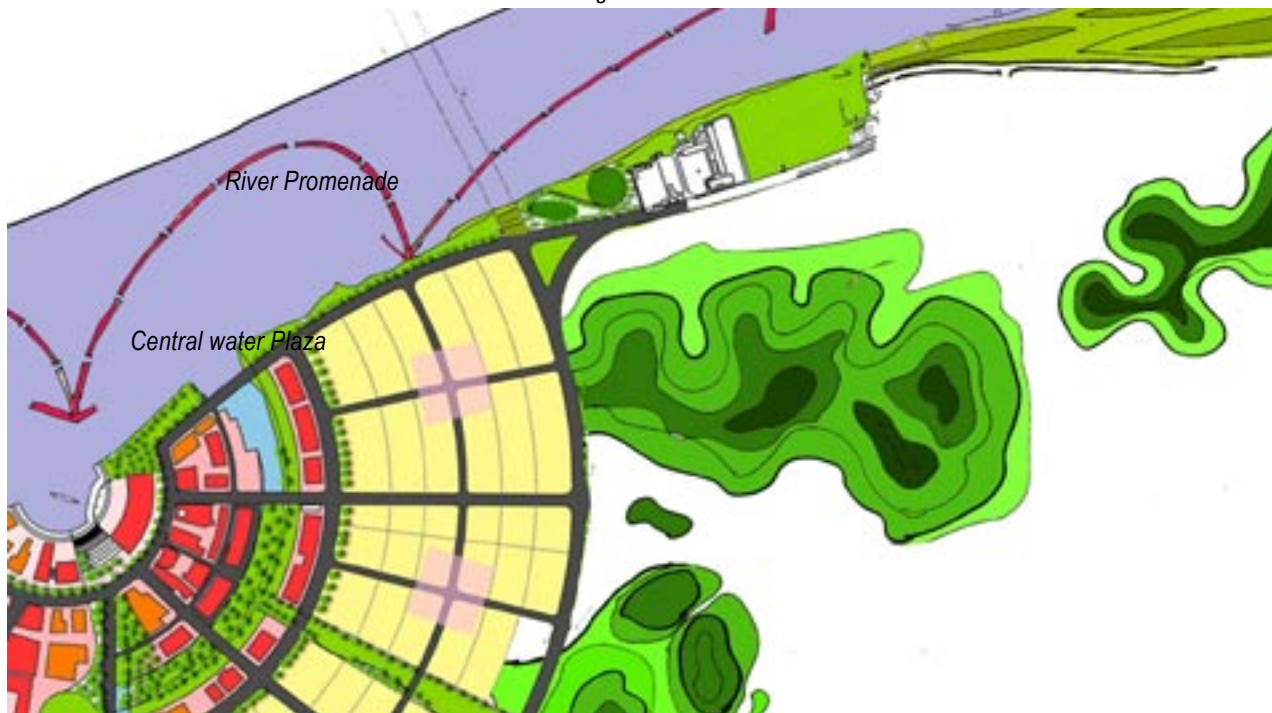


figure 20: Detail Plan at D



在高明规划

## VILLAGE REGENERATION

### 乡村重建

- Objectives
  - Premise
  - Principles
  - Case Studies
  - Design Opportunities
- 目标
  - 前提假设
  - 基本原则
  - 案例研究
  - 设计机遇

#### OBJECTIVES FOR REGENERATING A HISTORICAL LANDSCAPE

- To preserve the aesthetic quality of a property or area
- To accommodate the needs of a changing urban, suburban or rural landscape.
- To utilize village as a unique aspect of the urban parks and open space system

#### 以重现历史景观为目标

- 保护一个地区或建筑的美学价值
- 适应、调节城市、近郊和农村地区发展变化的需要
- 充分利用乡村地区，使其成为城市公园与公共开放空地系统中独特的一部分

#### PREMISE BEHIND DESIGN RESEARCH

As Gaoming moves forward, the village can potentially be seen as an urban park or an open space. In the future, the treatment of the boundary between the villages and new developments may be similar to the boundary treatment between park and urban edge. The placement of new infrastructure can also enhance the diverse nature of this regeneration.

#### 设计研究的假设前提

随着高明的不断发展，乡村可以被视为未来城市公园或开放空间。在未来的发展中，乡村与新开发区的边界处理与公园和城市的边界处理应当相类似。新的公共设施也可以提高重建的多样性。

figure 1: entry diagram

### PHYSICAL REHABILITATION

Regeneration of Gaoming's villages will involve a high degree of intervention and the resulting loss of historical fabric. Changes are necessary to distinguish the physical nature of the village from the new development. These physical changes will also focus on pedestrian and vehicular circulation, entries, and boundaries.

#### PRINCIPLE ONE:

##### Entry Points and Access

- Emphasizing entrance to a village strengthens the visual transition from village to city.
- Creating and widening cross streets enhances public and sanitation access to village.

#### PRINCIPLE TWO:

##### Boundary/Circulation

- Establishing and differentiating boundaries and restricting major vehicular circulation to the exterior is important in maintaining the identity of the village.

### 修复外貌

在对高明村庄的重建修复过程中将会增加干预并导致部分历史结构的流失。在发展的过程中有必要进行改造以区分乡村自然原貌与新发展的区域。这些改造将包括行人和汽车的流通、入口和村庄的界限。

#### 原则之一: 入口处

-强调乡村的入口将增强从城市到乡村过渡的视觉效果。

-建立和拓宽相交的道路将提高乡村公共设施与卫生水平。

#### 原则之二: 边界与流通

建立和区分边界, 限制通往外界的主要机动车道是保持其乡村特征的关键。

*figure 2: Village Planning Handbook: Bucks County Planning Commission*

## 在精明规划

### **CASE STUDY ONE: MORSE VILLAGE VISITOR CENTER: SINGAPORE**

#### **Entry**

Emphasized through a gated entrance.

#### **Boundary**

Buildings aligned on periphery to create a buffer between village and city.

#### **Circulation**

Vehicular circulation surrounds the village and parking is included to maintain the pedestrian friendly village.

专题研究之一：  
新加坡Morse村游客中心

入口：  
以大门的形式强调入口

边界：  
建筑排列在圆周一线，以建立城市  
与乡村之间的缓冲区。

流通：  
村庄与停车场周围的机动车道使村  
庄交通便捷。

*figure 3: Image taken from: Parks & Water bodies Plan: Singapore Ministry of National Development.*

**CASE STUDY TWO:  
MILLEGATE VILLAGE: NEWARK, BRITAIN**

**Entry**

Gate marks entrance to village center.

**Circulation**

Vehicular Street is added and passes through gate to create access to village interior. Pedestrian streets are preserved and paved to create an intimate setting for commercial programming.

专题研究之二：  
英国纽瓦克郡Millegate村

入口：  
大门标志着村庄的入口

流通：  
机动车道从大门入口处直通村庄内部中心区。原有人行道被保存并铺砌了石头，为商业区增加了亲近的气氛。

*figure 4: Images taken from: Urban Design Street and Square: Architectural Press*

## 在高明规划

### DESIGN OPPORTUNITIES

Gaoming is an ideal site for potential village regeneration:

- Villages are surrounded by canal and fish ponds, increasing their potential for preservation.
- Location by the waterfront taps into the theme of "Model Water City."

### 设计机遇

高明是村庄重建的理想地点：

- 被运河与鱼塘包围，乡村受到保护的可能性将增强
- 与水域接近的地理位置有助于发展"模范水乡"模式



figures 5, 6: Locations of villages

图5和图6：村庄的地点







在高明规划