CONTEMPORARY ARCHITECTURE IN CHINA

中国当代建筑大系

学校
SCHOOL BUILDINGS

覃力/编　李婵/译
Edited by QIN Li
Translated by Katy Lee

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"*Contemporary Architecture in China*" is a book series aiming to introduce outstanding Chinese architecture to the world. This volume covers projects of school buildings, including campuses for universities and colleges, middle schools, and primary schools. Many of them are masterpieces that have received high praises internationally.

Schools are places for education. Many schools in China have their own cultures and spirits accumulated during a long history, which should be embodied in their architecture. Thanks to advanced construction technologies, school buildings are more likely to demonstrate cultural or regional characteristics freely. They provide better conditions for modern teaching and learning, achieving a balance between architecture and environment, form and function, tradition and innovation. With avant-garde contemporary architecture, these schools in China maintain their vigour and vitality. We are honoured to present them to the world, not only for architecture profession, but also for cultural communication.

《中国当代建筑大系——学校》包含了中国当代著名建筑师在中国境内设计建成的著名学校建筑，这些建筑中有许多在世界上已经享有盛名，得到了世界同行及相关专业人士的充分肯定。

学校是人们接受教育的场所，是留存、传承、创造文化的基地。学校建筑的设计建造，既展现了学校的历史和文化，又尊重建筑科学的客观规律、创造性地利用特有的文化和地域优势，更在建设中传译了建筑的文化内涵。这些出色的校园建筑作品，既适应了现代教学的需要，塑造体现时代气息的内外空间，又能表达高品位的文化和学术气氛；在建筑与环境、形式与功能、继承与创新等关系方面，既传承历史文脉，又焕发出了新的生命力。在此，我们把这些优秀的建筑作品整理、编辑成为图书产品推向世界，为中外设计师经验交流提供一个窗口；为中国文化对外传播创造又一渠道。

SCHOOL BUILDINGS
学　校

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FOREWORD

In the recent ten years in China, with the nationwide strategy of "invigorating the country through science, technology and education", the implementation of compulsory education, and the rapid development of economy, educational architecture including universities, colleges, middle schools and primary schools has been growing at an unprecedented pace. Such fast development of educational architecture is rare in China and even in the world, in terms of both construction scale and speed. Thanks to the enthusiastic construction, school facilities are greatly improved for better educational environments, and architects get more opportunities to produce good architecture.

Many of the recently-completed school buildings are designed with innovative concepts. Generally speaking, nowadays when land resources become increasingly limited and construction sites grow larger and larger, architecture integration has become a trend, especially in educational contexts. In many schools and campuses, integrated complexes have been built with vertical and horizontal organisation of spaces to achieve a high efficiency in space utilisation. Various programmes are densely organised. Furthermore, new spaces that are rarely seen in traditional schools are added, such as lounges, restaurants, gathering and activity spaces. In this way, not only land resources are better utilised, but also school space becomes much more diversified and school life more interesting and lively.

From the perspective of architectural design, in the educational architecture built in recent years, compared with those built before the policy of "reform and opening-up", architects paid more attention to breaking up conventions in school design. School buildings used to have isolated and closed spaces, but now architects would like to build open spaces to stimulate interactive teaching, with more spaces for sharing and communication among students and teachers. Undoubtedly, the most attractive thing in school life for students is various activities. Therefore, architects should spare no effort in creating satisfying activity spaces, which not only are important for students to enjoy a diversified and interesting school life, but also give unique identity to a school.

While architects have reached an agreement on the significance of diversity and identity for educational architecture, however, we still observed the stereotypes of school building recurring. Simple replication of conventional school architecture still happens, and on the contrary, some schools go to extremes in seeking magnificent architecture regardless of cost. They prefer rigid axes, large plazas and luxurious appearances. Actually, we believe school spaces should be humanistic, and full of vigour instead of magnificence or luxury. In school architecture we should pay attention to culture rather than dignity or authority. School buildings should set good examples in being resource-saving and avoid fervent craving for greatness in building scale or appearance.

By contrast, many middle and primary schools in remote areas as well as hope schools in poverty-stricken areas have set good examples for educational architecture. Local materials and techniques are applied to reduce cost. Modern design approaches and traditional construction skills are perfectly combined, producing new unique contemporary school buildings. In these buildings we find that teaching and learning spaces can be quite interesting, and even fascinating! Thus we foresee a promising future for educational architecture in China, which would be full of joy, diversity, and vitality.

QIN Li
July 10th, 2012

前　　言

近十余年来，伴随着科教兴国战略决策的确立、义务教育的普及和经济建设的飞速发展，我国的大学和中、小学等教育建筑，正在经历着跨越式的急速增长，校园建筑的建设规模和建设速度，在我国教育建筑的发展史上都是空前的，就是在世界范围内，恐怕也很难找到类似的情况。这一校园建筑的建设热潮，既有效地弥补了各级教学设施的不足，改善了教学设施的完备程度，使校园建筑等硬件水平得到了大幅度地提升，同时，也为建筑创作提供了难得的契机，孕育出一大批高水准的设计作品。

许多近几年落成的校园建筑，在设计理念上都有所创新。从宏观上来讲，在土地日趋紧张，建筑规模不断增大的情况下，为了提高校园建筑的使用效率，空间的集约化和功能组织的综合化，已经成为新一代校园建筑的发展趋向。很多校园规划均以相对密集的结构，形成集约化的建筑布局，从水平和垂直两个维度上，立体化地将空间进行整合。在传统的教学空间中，融入了更多的休闲、餐饮、集会、活动等生活功能，不但使校园空间更为丰富，土地资源的利用更加合理，而且，还使得校园生活的品质得到了有效地提高。

从建筑设计的层面来看，近年来设计的教育建筑与改革开放之前相比，不论是大学还是中、小学，建筑师们都普遍致力于通过打破孤立、封闭的空间状态，营造开放、互动的教学环境，创造交往、共享空间等方式，来促进教师与学生、学生与学生之间的相互交流和沟通。自然，对于学校建筑来说，校园中最有活力的就是学生们的各种活动。因此，为了适应这些活动的需要，就必然要在校园建筑的设计中，创造多样化的公共活动场所，从而使校园空间能够丰富于变化，能够更加有趣，同时，学校建筑的个性也因此而越加突出。

但是，在这种多样化、个性化得到大家认可的同时，我们也看到了当今的校园建设中，还存在着某些程式化和快餐式的东拼西凑的现象。甚至，某些校园更是不计成本地追求恢弘气派与森严秩序，轰轰烈烈地去建造那些壮观却缺乏生气，过于严整刻板的大轴线、大广场和奢华的建筑外观。其实，校园环境是最具有青春活力的地方，所以，校园建筑就更应该强调文化氛围，更应该平易近人和人性化，而决不是尊贵权威或者霸气。教育建筑必须要率先做到减少资源浪费，避免好大喜功和过分地追求外在形象。

与之相对，许多偏远地区建设的中、小学，贫困地区建设的希望学校，却为我们树立了很好的榜样。一些学校为了降低造价，采用了当地的材料、技术，以现代的设计方式和传统的建造方法设计建造出了很有特色、又兼具时代特征的校园建筑。这让我们看到了希望，看到了时代的进步，看到了教学空间的形制也是非常有趣的，也是可以异想天开的！是充满了快乐与活力的！是丰富多彩的！

覃力
2012年7月10日

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CHINA ACADEMY OF ART, XIANGSHAN CAMPUS

Hangzhou, Zhejiang Province

WANG Shu, LU Wenyu/The Amateur Architecture Studio, Contemporary Architecture Creation Study Centre, China Academy of Art

中国美术学院象山校区

浙江省 杭州市

王澍，陆文宇 / 业余建筑工作室，中国美术学院当代建筑研究中心

Area: Phase I Project 70,000m^2, Phase II Project 78,000m^2
Design/Completion Time: Phase I Project 2001/2004,
Phase II Project 2004/2007
Architect: WANG Shu & LU Wenyu / The Amateur Architecture Studio & Contemporary Architecture Creation Study Centre, China Academy of Art
Photographer: LV Hengzhong
Client: China Academy of Art
面积：一期工程70000平方米，二期工程78000平方米
设计/建成时间：一期工程2001年/2004年，二期工程2004年/2007年
建筑设计：王澍，陆文宇/业余建筑工作室，中国美术学院当代建筑研究中心
设计团队：华黎
摄影师：吕恒中
项目委托：中国美术学院

The new campus of China Academy of Art is located around Xiangshan Mountain, Hangzhou. The master plan of its phase I project is a morphological simulation of the natural relationships between mountains. Ten building units imply the trend of the mountains, which is obviously in association with the former villages on the site. Phase I project, which was designed in 2001 and completed in 2004, is occupied by the Public Art Institute, the Media and Animation Institute, library and gymnasium.

The Xiangshan Campus, which is generally in a mixed pattern of traditional academy and learning garden, embraces various styles of structure: the cloister like the one in an abbey gleaming behind the window on the lofty fir-slab wall, a combination structure of the Renaissance master's workshop and the modern studio, Bauhaus's workshop, as the symbol of elementary education on modern art, structured as an enclosed pedestal for all building units, and even the scattered and disordered site like the practice ground in Buddhist Cave Temples. All of this, finally joined in the recall and emotion of changeable landscape, displays the parallel gesture to the landscape around. The concealed bearing of the site shows the vivid declaration of the campus education quality and survival environment. The building in the site trends to hide itself, as a metaphor which the art education hiding behind the landscape after contributing itself.

The Xiangshan Phase I project is partitioned by courtyards with openings facing the mountain in different angles and the site where it locates. The angles, openings and locations are precisely defined. Based on the partition, the form and the detail of the units are made accordingly to interpret the relationship between the site and the scene. The phase II project at the south of the Xiangshan hill was designed in 2004 and completed in 2007, which consists of ten large buildings and two small ones. It contains the School of Architectural Art, the School of Design, art gallery, gymnasium, students' residential building and dining hall. The new buildings are all arranged at the margin of the ground, which is in the same direction as the hill stretches and similar with the local traditional buildings. Between the buildings and the hill, a large space is vacated, in which the original farm, river and pound are preserved. The form of each architecture changes naturally along with the undulation of Xiangshan hill.

In the campus, the building plans look like something arranged by accident; space feels like vacant or compact, public or private; two elevations may be far from each other in one building; all of this compose a series of locations which are waiting for some events to happen quickly. There is no strict structure, but the real life will be easily live here. This is the understanding to the traditional Chinese garden, which is especially expressed in the phase II project at the south of Xiangshan. The same as phase I project, the land beside which buildings and roads stand is released to the farmers, to plant crops. Land tax will not be charged. A 200-metre-long water channel connects the river and runs across the campus, which is not only regarded as a landscape, but also supplies the field and the pond with water.

The architectural structure consists of concrete with steel-bar frame, steel in some parts, and brick walls, which are common in local area. By using a lot of low-cost recycled bricks and tiles, and taking full advantage of local handcraft construction, the local masonry of multi-size bricks and the modern architectural technique are integrated, which creates a thick wall system that is thermally insulated. Besides, it not only saves the resources, but also makes great impact on the ecological consciousness of teachers and students. Like the phase I, the phase II project at the south of Xiangshan, takes a period of 14 months, when The Amateur Architecture Studio are working in the process. Many problems, which come from the handwork during construction process, were solved by working at the location.


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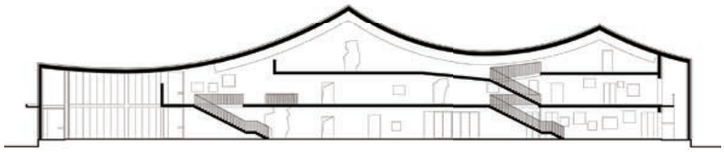
East Elevation 东立面图

West Elevation 西立面图

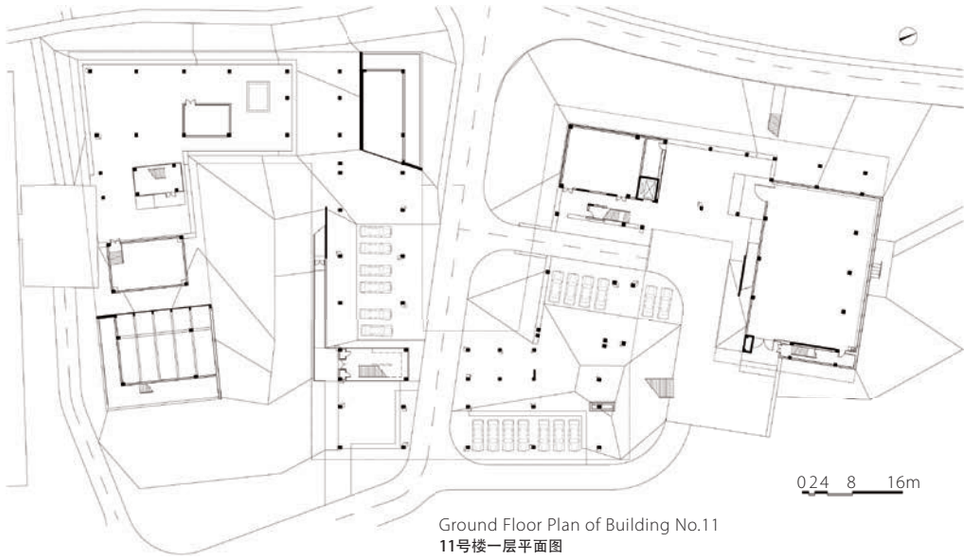
South Elevation 南立面图



North Elevation 北立面图

0 2 4 8m

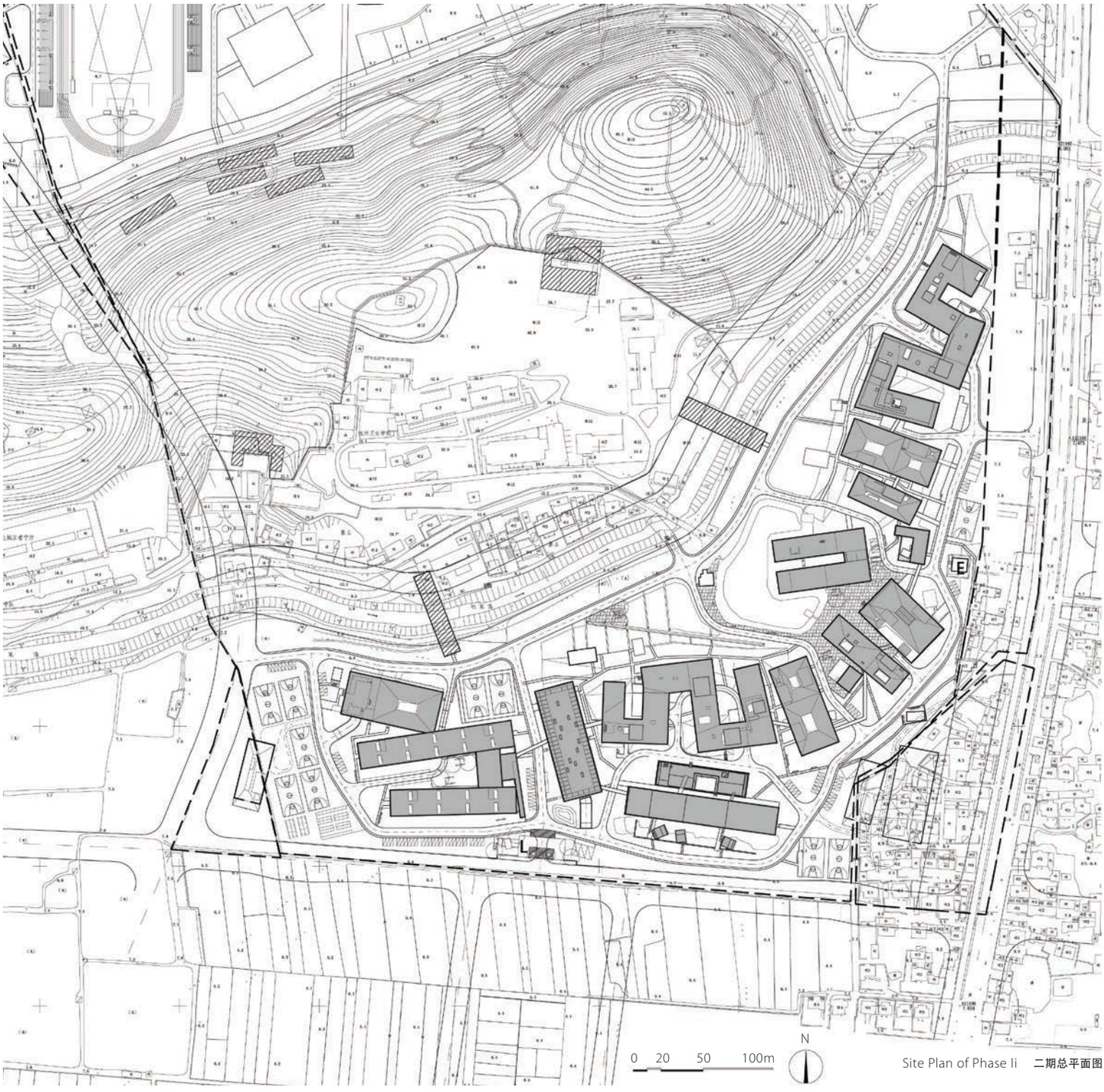
1. Courtyard of Building No.18
2. Perspective view of Building No.14
1. 18号楼庭院
2. 14号楼全景



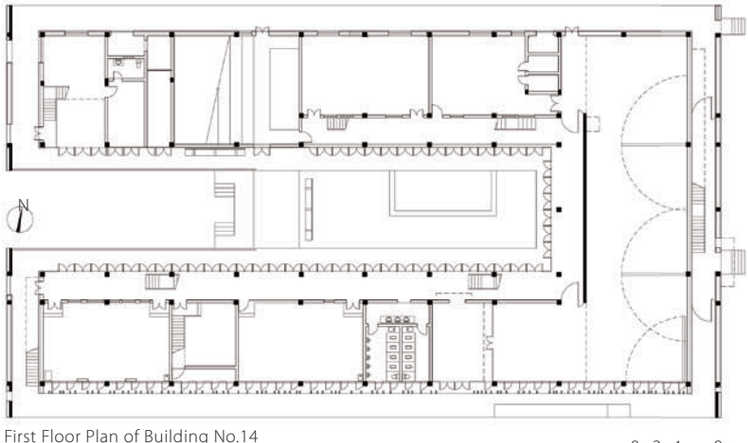
Ground Floor Plan of Building No.11
11号楼一层平面图

3. Courtyard view of Building No.14 from the east

3. 从东侧看14号楼庭院



Site Plan of Phase Ii 二期总平面图



First Floor Plan of Building No.14
14号楼二层平面图

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中国美术学院新校区坐落在杭州象山。校区规划一期工程因地制宜，模拟周围秀美山川的形态。新校区由10个建筑单元组成，布局上体现出山势的起伏，这也是该地原有村落的特色。一期工程于2001年完成设计并于2004年竣工，主要包括公共艺术学院、传媒动画学院、图书馆、体育馆。

象山校区总体上是传统校园与新型花园式校区双重模式的结合。校区内包含多种风格：回廊模仿修道院的制式，透过高高的冷杉木围墙上的窗口隐约可见，熠熠生辉；文艺复兴时期建筑大师的风格与现代包豪斯结构相结合，象征了现代艺术的初级教育，作为所有建筑单元（甚至包括周围一些分散的地方，如石窟寺的练习场地）共用的一个封闭基座。所有元素最终都融入校园景观之中，成为一个和谐的整体，同时与周围的山川景观遥相呼应。整个校区有一种深藏不露之感，仿佛喻示着该校的教育质量以及周围历史悠久的自然环境。建筑藏而不露，寓意隐藏在这秀美景色中的艺术教育。

象山校区一期工程通过几个院落进行划分，开窗以不同的角度朝向秀美山川，美景尽收眼底。角度、开窗、位置都经过精确计算。院落的划分使建筑单元的整体造型和细节处理都与周围景致协调一致。二期工程位于象山南部，于2004年完成设计，2007年竣工，包括10栋大体量建筑和2栋小型建筑，功能主要有建筑艺术学院、设计学院、美术馆、体育馆、学生宿舍及食堂。这些新建筑都分布在工程场地的边缘，建筑朝向与山势走向一致，跟当地传统建筑一样。在建筑与山脉之间空出一片开阔的空地，原有的农田、河流、池塘都得以保持原样。每栋建筑的形态随着象山的起伏自然地变化。

象山校区的建筑布局看起来像是意外造就而成；空间感觉似虚而实，开放与私密并存；一栋建筑的两个里面可能相隔甚远。这一切共同构成了校园内的各个场所，期待着丰富多彩的校园生活由此展开。没有死板的结构，随性体验生活。这正是中国园林的精髓所在。象山校区二期工程极好地体现了这一点。跟一期工程一样，建筑旁边的土地出租给当地农民种植农作物，不收土地税。200米长的水渠与河流相连，流经整个校园，不仅丰富了校园景观，而且为农田和池塘提供了水源。

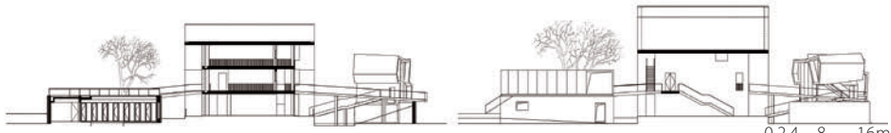
校园内的建筑结构主要采用钢筋混凝土框架，有些部分采用钢结构，此外还有砖墙——砖墙在当地建筑中普遍采用。通过使用大量造价低廉的回收砖瓦，并充分利用当地手工建造工艺，将当地传统砖瓦工艺与现代建筑技术相结合，打造出坚固厚实的墙体，保暖性能良好。不仅节约了能源，而且对该校师生的生态环保意识产生了巨大影响。与一期工程一样，二期工程也耗时14个月，业余建筑工作室全程参与其中。施工中遇到的许多问题都是靠建筑师现场解决的。

4. Roof view of Building No. 21
5. Interior view of Building No. 21
4. 21号楼楼顶
5. 21号楼室内

Nortu Elevation　北立面图

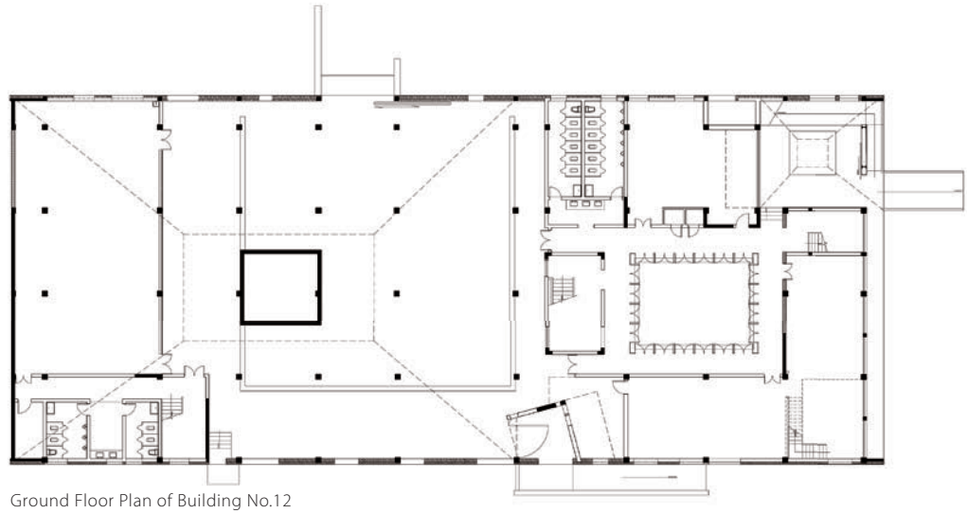
South Elevation　南立面图

6. Bird's-eye view of Building No.19 from the north
6. 北侧鸟瞰19号楼



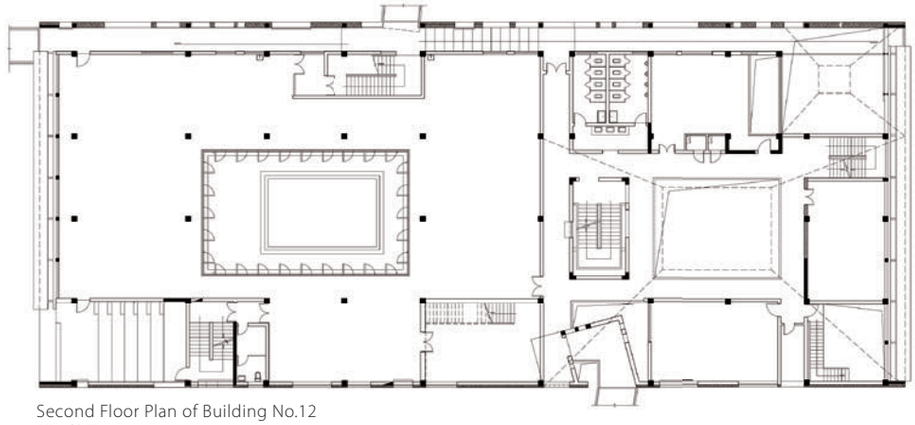
Section **剖面图**

7. Courtyard view of Building No.12
7. 12号楼庭院

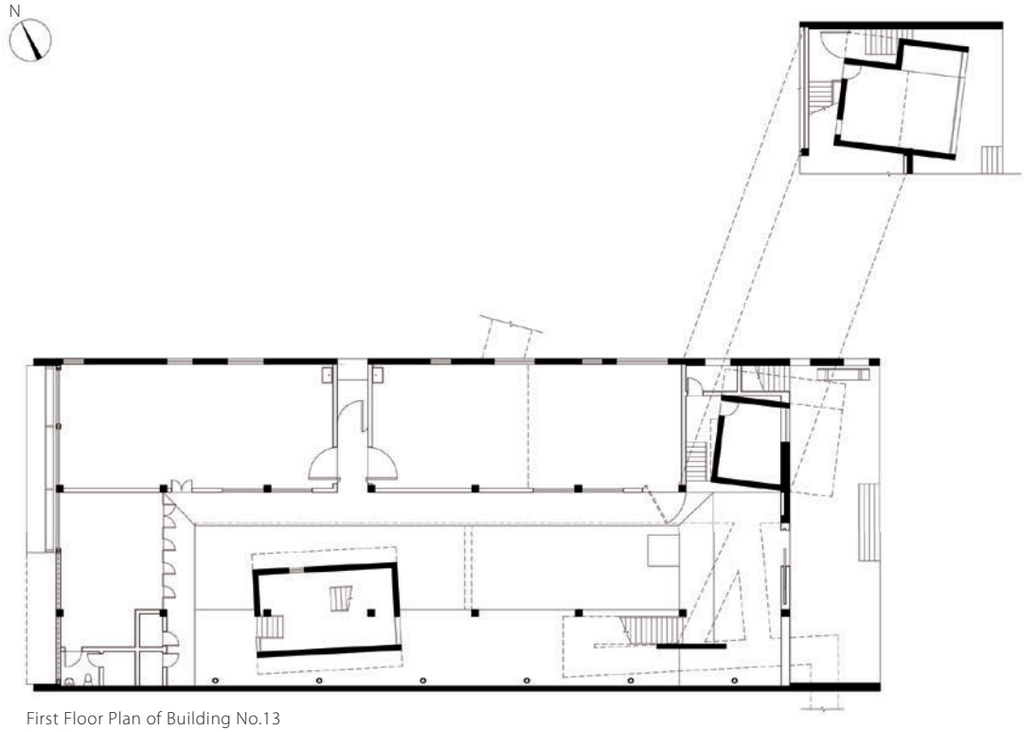


Ground Floor Plan of Building No.12
12号楼一层平面图

0 1 2 4 8m



Second Floor Plan of Building No.12
12号楼三层平面图



First Floor Plan of Building No.13
13号楼二层平面图

0 1 2 4 8m

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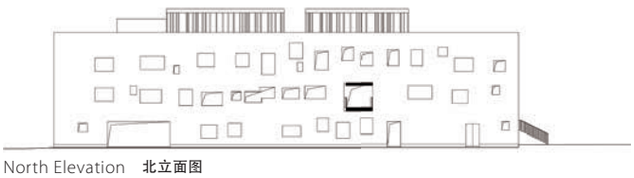
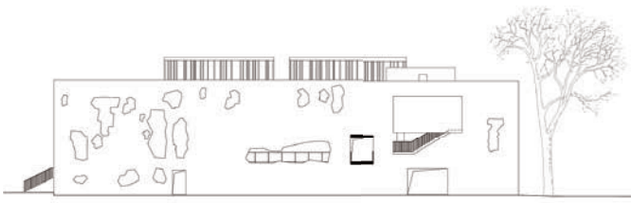
8. Overview of Building No. 11
8. 11号楼全景

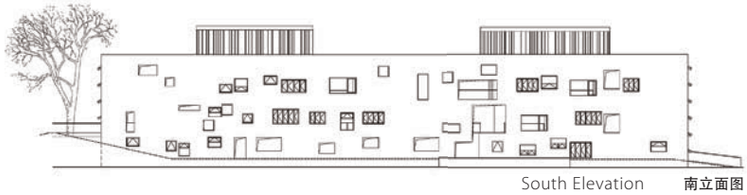


North Elevation **北立面图**



South Elevation **南立面图**

North Elevation 北立面图



South Elevation 南立面图

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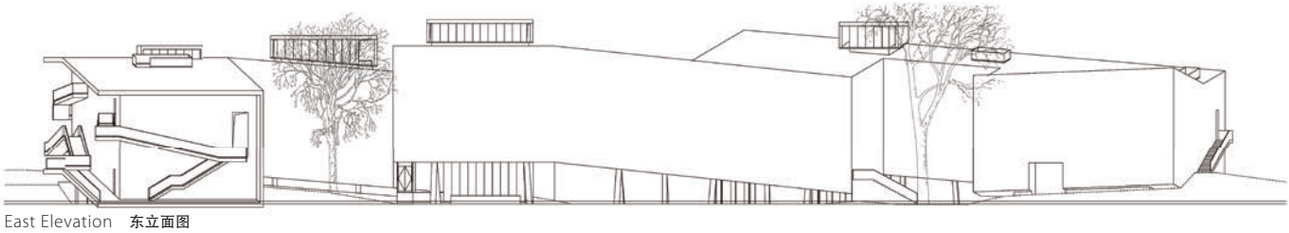
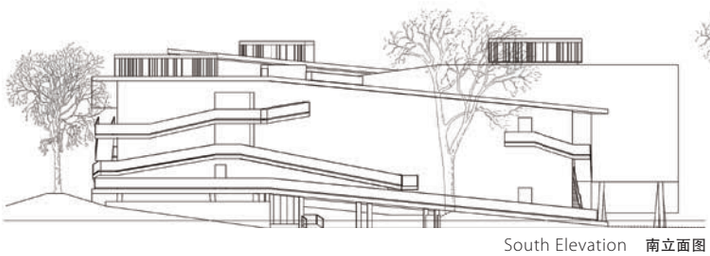
9. West view of Building No.11
9. 11号楼西侧

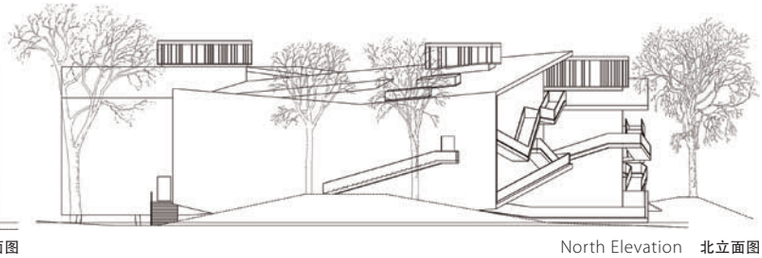


East Elevation **东立面图**

West Elevation 西立面图



South Elevation 南立面图

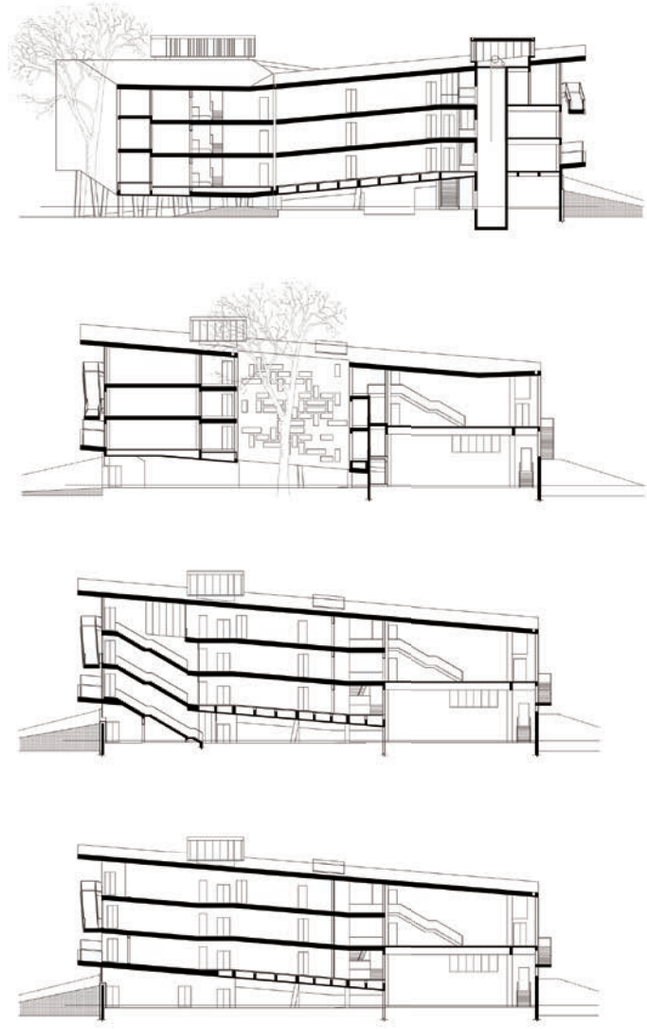


North Elevation 北立面图

10

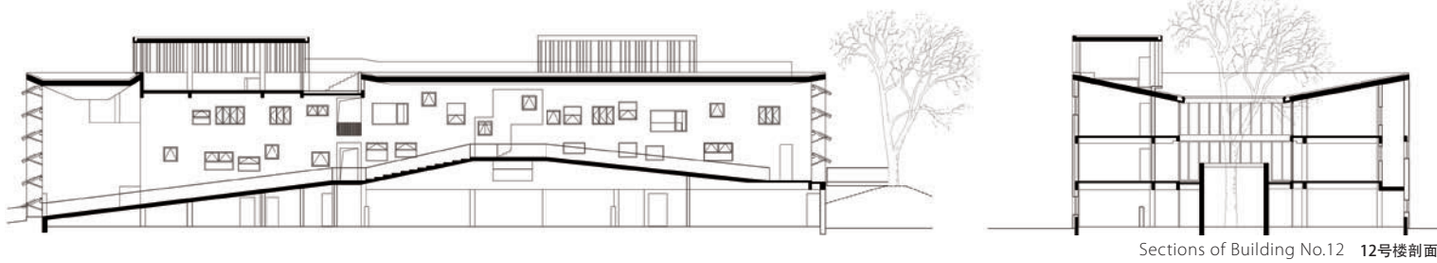
10. Corridor inside Building No.11
11. Half-open classroom
12. Exterior view of Building No.13
10. 11号楼内部走廊
11. 半开放的教室
12. 13号楼外景

11



Sections of Building No.11 **11号楼剖面图**

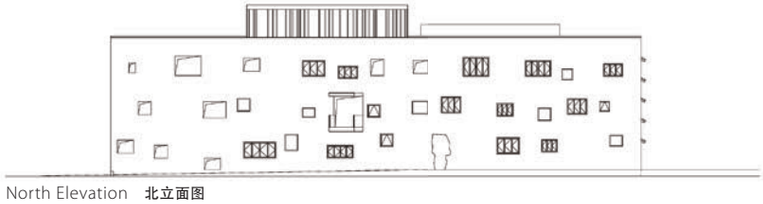
12



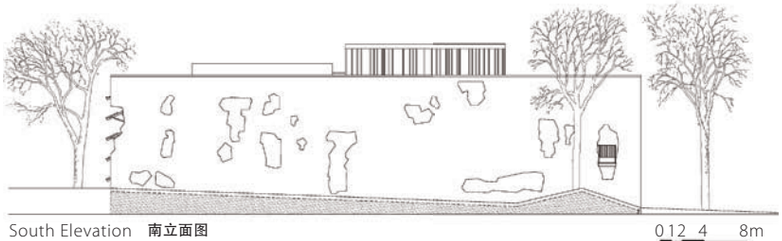
Sections of Building No.12 **12号楼剖面图**

13

13. Northwest view of Building No.15 at night
14. Courtyard of building No.13
15. Staircase of building No.13
13. 15号楼西北侧夜景
14. 13号楼庭院
15. 13号楼楼梯

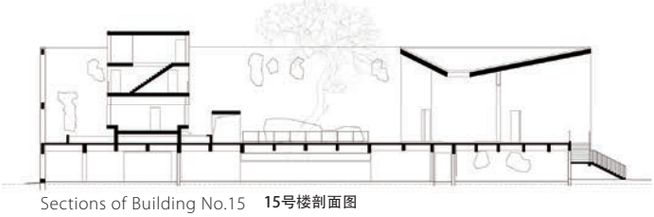


North Elevation **北立面图**



South Elevation **南立面图**

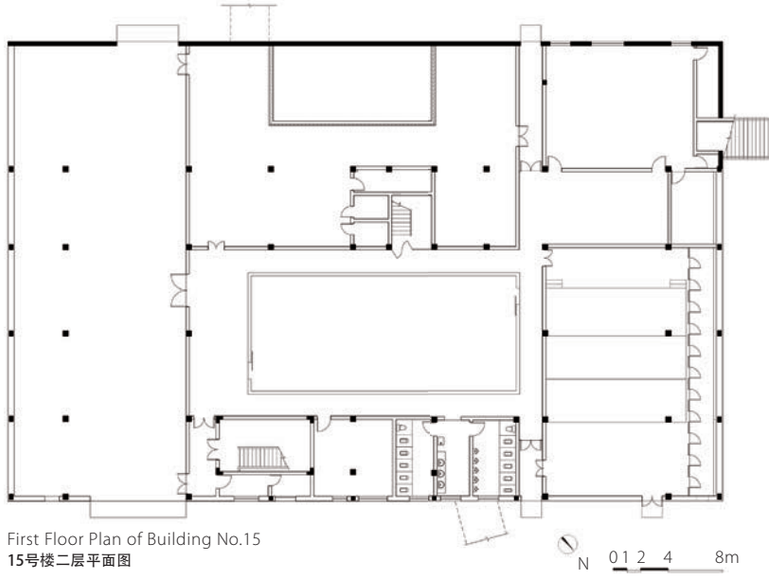
0 1 2 4 8m



Sections of Building No.15 **15号楼剖面图**

14

15



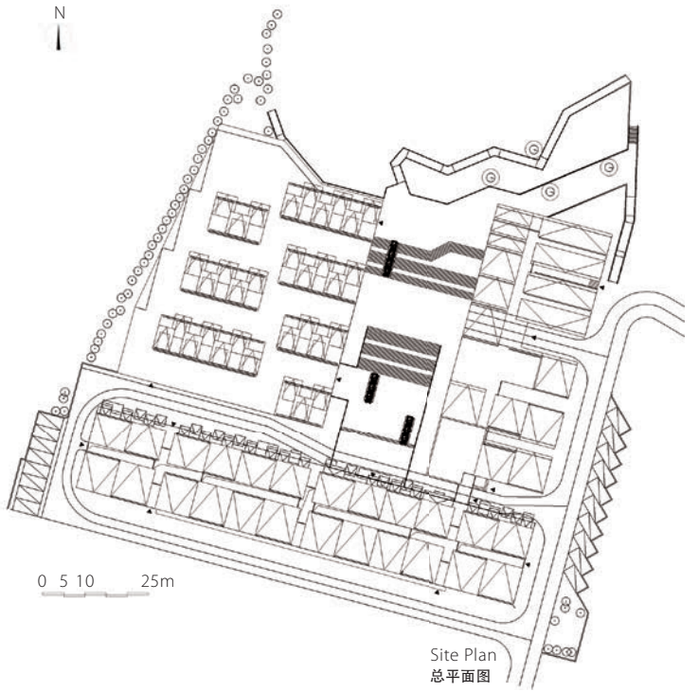
First Floor Plan of Building No.15
15号楼二层平面图

JISHOU UNIVERSITY RESEARCH AND EDUCATION BUILDING AND HUANG YONG YU MUSEUM
Jishou, Hunan
Yung Ho CHANG / Atelier FCJZ

吉首大学综合科研教学楼及黄永玉博物馆

湖南省 吉首市
张永和 / 非常建筑

Gross Floor Area: 25,727.2m²
Jishou University Research and Education Building: 22,032.9m²
Huang Yongyu Museum: 3,688.3m²
Design/Completion Time: 2003-2004/2006
Principal Architect: Yung Ho CHANG / Atelier FCJZ
Project Architect: Chen Long
Design Team: HU Xian, ZHANG Bo, HE Huishan, NI Jianhui
Collaborator: Yishe Architectural Design Consultants Co., Ltd., Beijing
Client: Jishou University
建筑面积：25727.2平方米
综合科研教学楼建筑面积：22032.9平方米
黄永玉博物馆建筑面积：3688.3平方米
设计/建成时间：2003-2004年/2006年
主持建筑师：张永和/非常建筑
主持建筑师：陈龙
设计团队：胡宪，张波，何慧珊，倪建辉
联合设计：北京意社建筑设计咨询有限公司
业主：吉首大学



Site Plan
总平面图

The project is located at the campus of Jishou University in Jishou City, Hunan Province, and is mainly concerned with two important issues relating to site: one is the relationship between architecture and its surrounding environment, and the other is how to establish relationships with local architectural tradition and culture.

The entire campus of the University was built on a hilly area, and nearly all the buildings were built against the hill. The site of the project sits on the south of the artificial lake at the campus centre, where it was formerly a slope which was later terraced. The Research Education Building and the Museum form a wedge-shaped composite section that inserts itself into the land. The building mass, multiple roofs and integrated windows blur the vertical and horizontal forms of walls and roofs, which in turn contributed to rebuilding and reestablishing the physical presence of the site.

Respect for local architectural culture has been developed into two types in Jishou: one is the preservation of "specimen buildings" in the old town, and the other is the duplication of local single residence regardless of structure, material, function, scale, etc. of the new building. Under such circumstances, the architects conformed to contemporary architectural conventions, and decided to keep the immense volume. They tried to bring the pattern of local residential groups into the new building, visually establishing a relationship between the new architecture and local architectural culture. Therefore, conceptually the architecture is both a "hill" and a "village".

2

建筑位于湖南省吉首市吉首大学校园内，由两部分组成——综合科研教学楼和黄永玉博物馆。设计主要关注两个问题：一个是建筑如何重组建筑与周边物理环境的关系；二是建筑如何与当地原有的建筑文化传统建立积极的联系。

校园建在山地上，几乎所有的建筑都是依山而建。建筑的基地位于校园中心的人工湖南侧，原是坡地，后被削平。教学楼与博物馆形成的整体以楔状的剖面形态插入基地，用建筑的手段恢复了基地物理环境的秩序。裙房部分的屋顶与高层部分的北侧外墙在剖面形态上构成两个不同斜率的连续的表面，从而模糊了屋顶与外墙两种不同功能的建筑构件在形态上的差异。屋顶与外墙上相似的开窗方式进一步加强了这种混淆，使建筑整体加入“造山运动”。

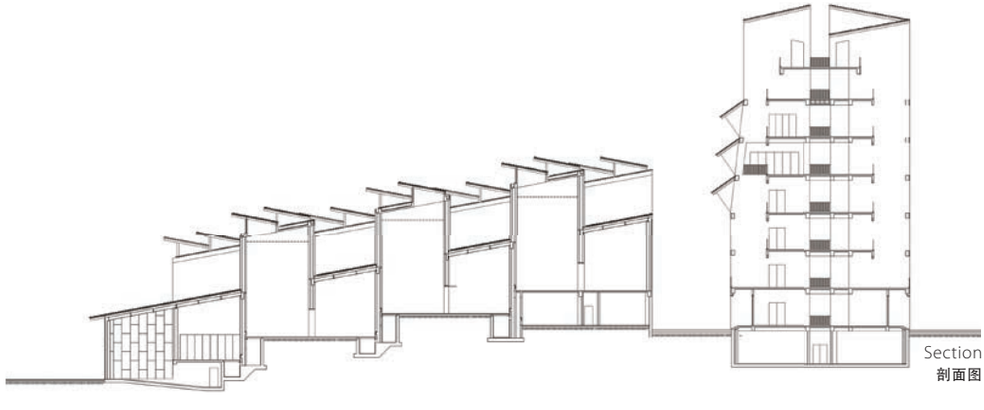
对建筑文化传统的尊重在吉首地区分化为两种模式：一种是对老城区内建筑物“标本”式的保护；另一种是新建的建筑物不顾结构、材料、功能、尺度等方面的巨大差异，对传统民居单体形式的“戏仿”。我们以保持当代建造逻辑并接受新建筑的大尺度为前提，尝试将传统民居村镇聚落的肌理带入建筑的形式系统，从而在视觉上建立起新建筑与当地建筑文化传统的呼应。

因此，在概念上，这栋建筑既是“山”又是“村”。

Elevation 立面图

1. Passageway on the seventh floor of Academic Building
2. Bird's eye view
3. Entrance plaza

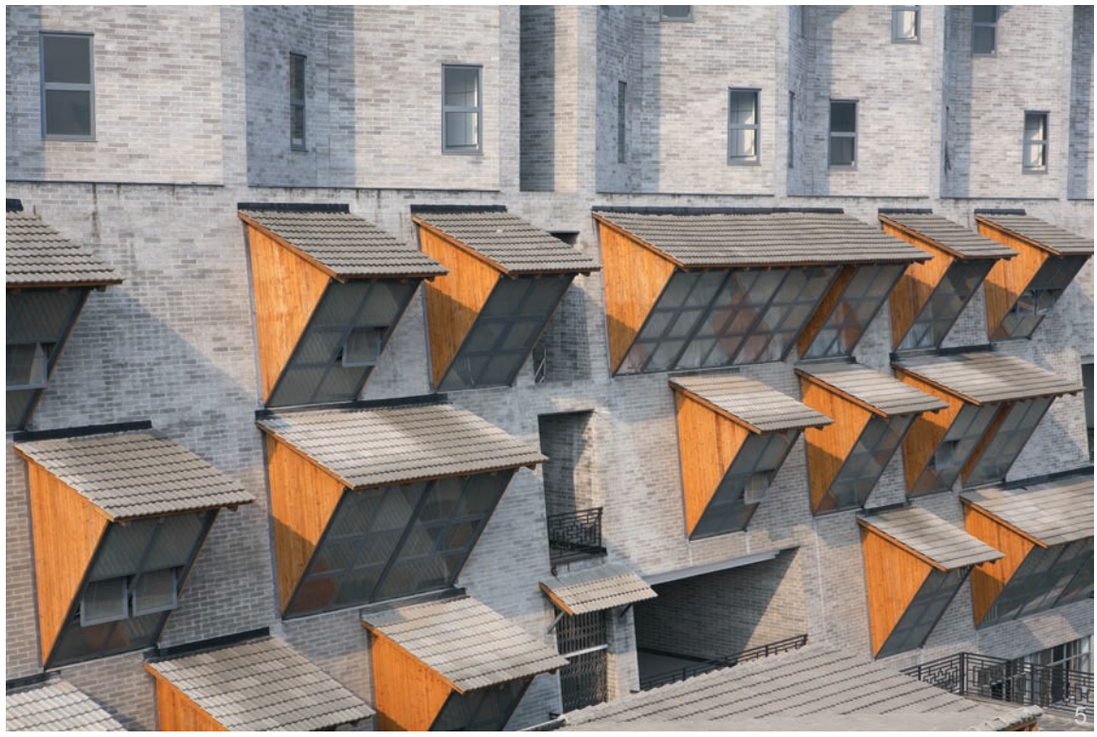
1. 教学楼第八层中廊
2. 鸟瞰图
3. 入口广场



Section
剖面图

4. Space between Academic Building and Gallery
5. Academic Building façade detail
6. First floor passage in Hall of Graduate Studies

4. 教学楼与美术馆之间道路
5. 教学楼局部立面
6. 研究生楼二层穿廊



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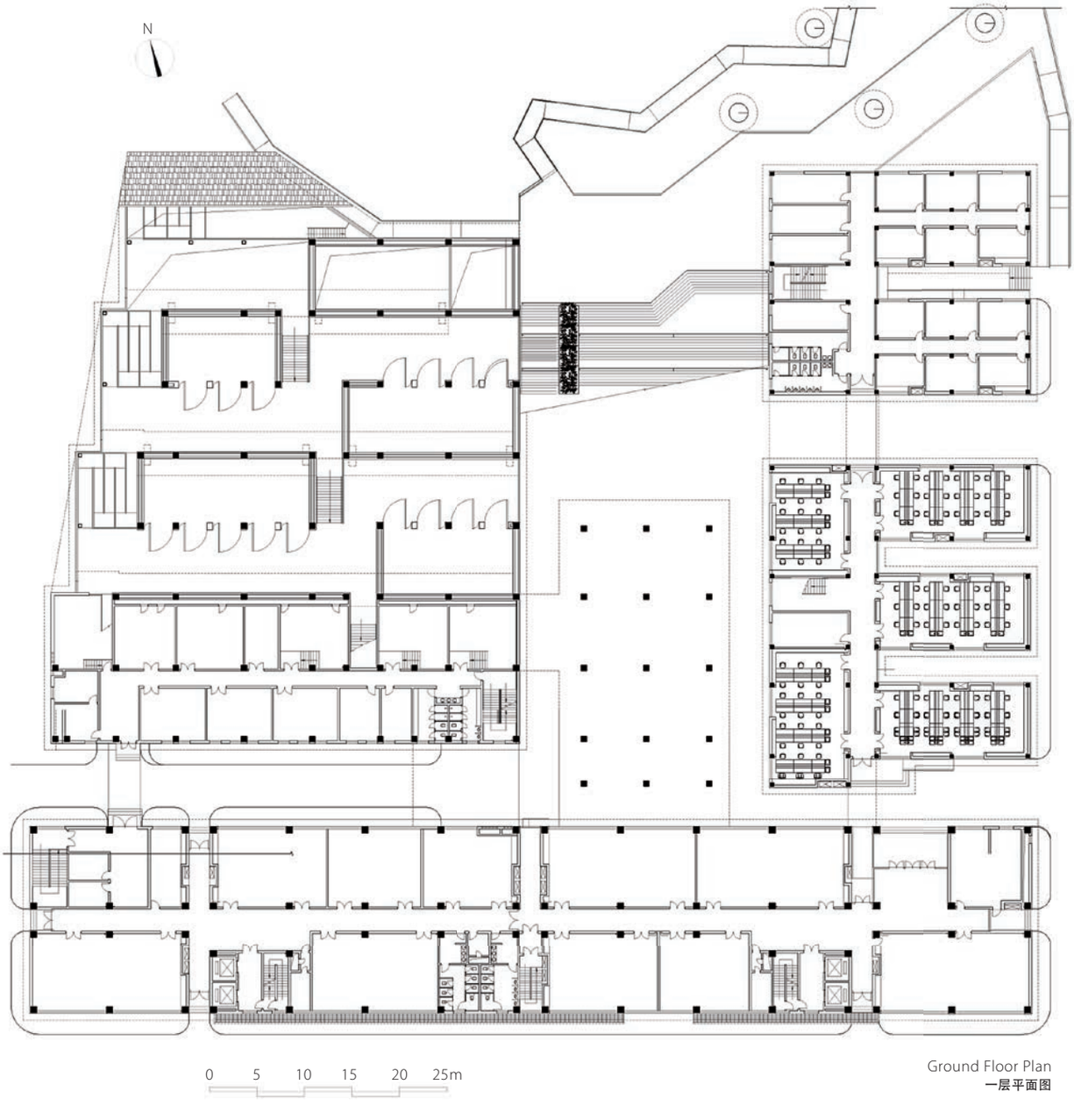
7. Entrance hall in the Gallery
8. Gallery interior
7. 美术馆门厅
8. 美术馆室内



Ground Floor Plan
一层平面图

BUPT STUDENT DORMITORY AND CANTEEN
Beijing
SDG (Shine Design Group Pty. Ltd.)

北京邮电大学学生宿舍和学生食堂
北京市 昌平区 郑各庄
澳大利亚SDG设计集团

Site Area: 36,800m²
Gross Floor Area: 55,300m²
Design/Completion Time: 2005/2006
Architect: SDG (Shine Design Group Pty. Ltd.)
Design Team: NIE Jianxin, CHEN Xiangqing
Photographer: SDG (Shine Design Group Pty. Ltd.)
Client: BUPT
总用地面积：36800平方米
总建筑面积：55300平方米
设计/建成时间：2005年/2006年
建筑设计：澳大利亚SDG设计集团
设计团队：聂建鑫，陈向清
摄影师：澳大利亚SDG设计集团
业主：北京邮电大学

Master Plan
The Beijing University of Posts and Telecommunications (BUPT) is located in Haidian Disctrict, Beijing. The student dormitory is built at the north part of the campus, with a sports field on the east, Hongfu Middle School on the west, BUPT teaching section on the south, and Hongfu Community on the north.

The dormitory complex is composed of a series of buildings organised around the central "water belt" as an axis. On both sides of the axis three semi-closed dormitory buildings are located. The west ones are oriented on a north-south direction, in accordance to the adjacent existing buildings on the west, while the east ones are placed parallel to the main teaching building. Each semi-closed building defines a space for students, contributing to privacy and independency. Each space has its own qualities which give the users a sense of belonging.

On the east side of the central axis are five-storey buildings, lower than the west side ones (six storeys). The one at the northeast corner is the highest building with nine storeys, acting as the focal point of the complex.

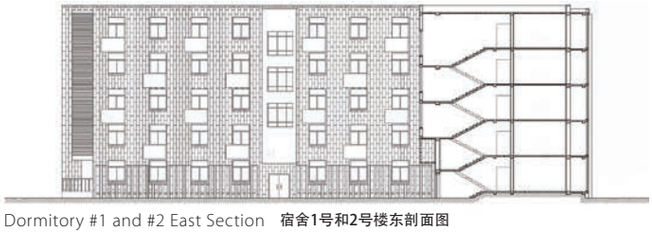
Architectural Design
Due to the long history of the site, the architects decided to adopt grey bricks on the façade to create a special air that belongs to traditional Chinese architecture. The random pattern on the brick façade is intended to resemble information code, since these buildings serve for the College of Software. As for the nine-storey building at the northeast corner, pre-fabricated cladding panels are used, resulting in a low cost and short construction period. Furthermore, the colour of the panels is similar to that of the grey bricks, so it looks as if they are grey bricks with a big scale, creating a unified, harmonious context.

The grey bricks are slightly different in colour and shape, and are selected according to the users. The three buildings on the west are dormitories for men, the two on the east are for women, and the nine-storey one is a high-standard dormitory. Correspondingly, dark grey bricks are mainly used on men's dormitories, with randomly inserted light grey bricks; light grey ones are used on women's dormitories, with randomly inserted dark

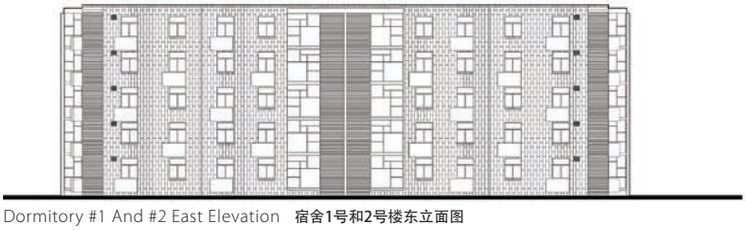
Rendering 效果图

1. Dormitory façade facing the river
2. Overview of dormitory buildings
3. Façade of female student dormitory
1. **河边看宿舍外景**
2. **宿舍全景**
3. **女生宿舍外立面**

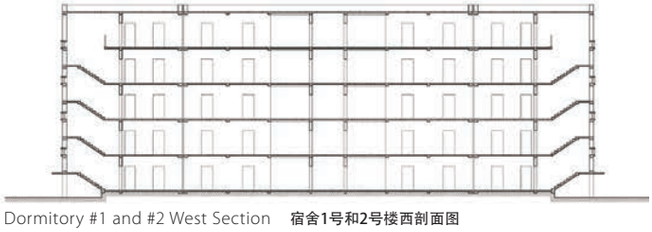
Dormitory #1 And #2 West Elevation **宿舍1号和2号楼西立面图**



Dormitory #1 and #2 East Section **宿舍1号和2号楼东剖面图**



Dormitory #1 And #2 East Elevation **宿舍1号和2号楼东立面图**

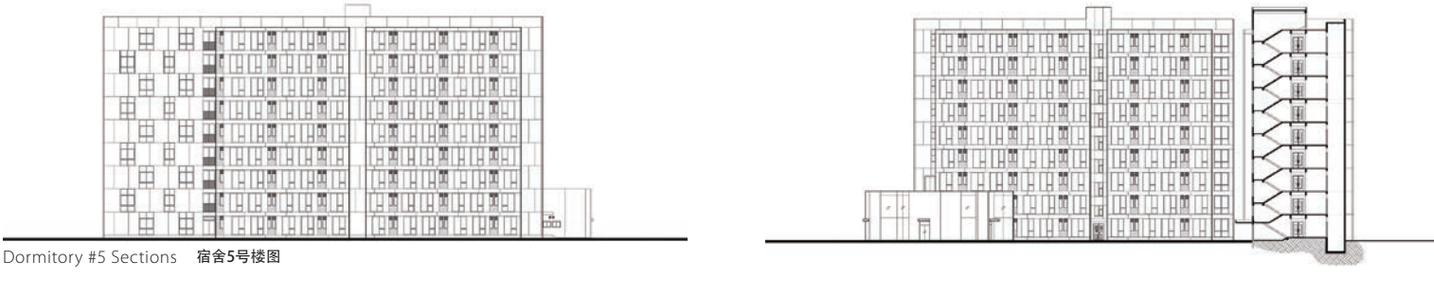


Dormitory #1 and #2 West Section **宿舍1号和2号楼西剖面图**

grey ones; as for the high-standard dormitory, Qomolangma pre-fabricated panels are used with a balanced combination of dark and light grey. The architects didn't want to make the buildings look too rational or mechanical, and therefore they adopted yellow panels for the balconies on the west three buildings to bring out a lively air, since the users are vigorous young students. The east two buildings have "peeling surfaces" on particular positions, making them appear more beautiful since they are women dormitories. The high-standard dormitory has yellow panels on its façade for ornamentation.

BUPT Student Canteen

The canteen has a total floor area of 2,300 square metres, with three storeys above ground. It is a steel structure clad in large-scale pre-fabricated panels, with a grey tone to correspond with the adjacent dormitory complex. The wavy folding boards on the façade are a metaphorical architectural language reflecting both the waterscape of the site and the vivacious characteristics of students. The monolithic structure resembling a bookshelf gets an industrial feel from inside through to outside, and it is easy for both construction and utilisation.



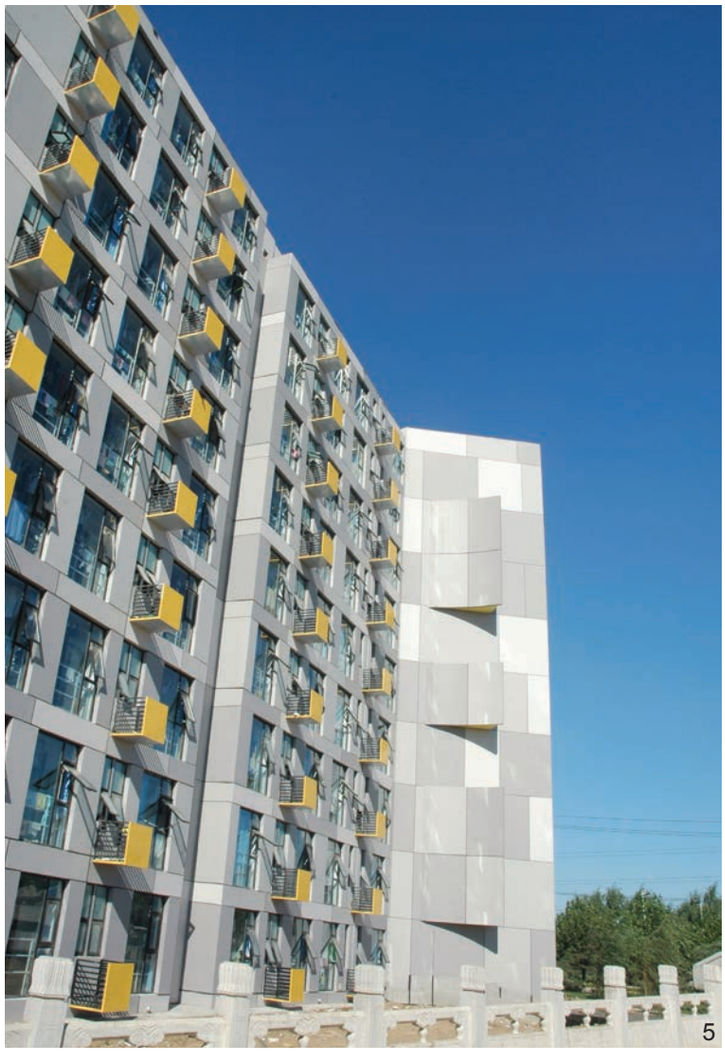
Dormitory #5 Sections 宿舍5号楼图

4. Foreign student dormitory building façade
5. Northeast view of foreign student dormitory building
6. Foreign student dormitory building façade detail

4. 留学生宿舍外立面
5. 留学生宿舍外立面东北转角
6. 留学生宿舍外立面细节

Dormitory #5 Ground Floor Plan:
1. Dorm
2. Balcony
3. Corridor
4. Activity room
5. Lift
6. Barrier-free ramp
7. Cleaning room
8. Fire fighting control
9. Service room
10. Duty room

宿舍5号楼一层平面图：
1. 宿舍
2. 阳台
3. 走廊
4. 活动室
5. 电梯间
6. 无障碍坡道
7. 保洁房
8. 消防控制室
9. 舍区服务中心
10. 值班室



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总体规划：

学生宿舍在整个校区的北面，东面是运动场，西临宏福中学校区及食堂，南面北邮教学区，北为宏福社区环城水系。学生宿舍区的整体布局为组合式：以中央“水带”为南北轴线，东西各布三幢宿舍，每幢楼采用半围合式，西面三幢楼呈正南北排列，与原有西侧相邻建筑相对应，东面三幢与主教学楼平行。每幢楼的半围合环境明确了学生的生活环境空间，增加了私密性和独立性。每个空间都体现自己个性化的概念，使宿舍使用者有归属感、参与感。沿中轴展开：高度控制为东面低（5层）西面高（6层），最东北角的一幢最高（9层），为整个建筑群的控制点。

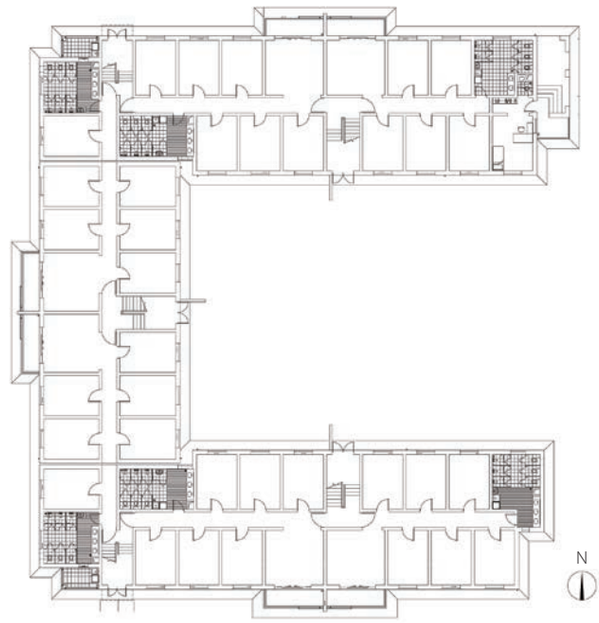
建筑设计：

基于所在地历史悠久，立面采用灰砖系列，具有中国传统建筑的文化气息。灰砖立砌错缝犹如信息码提示，体现了软件学院的特色。东北角（9层）采用预制外挂板，成本低施工速度快，色彩同灰砖，仿佛灰砖同比例放大，与整体协调统一。

灰砖的色差设计与造型，分别由居住者的不同：西三幢（男生宿舍），东二幢（女生宿舍）及（9层）高标宿舍而有所差别。西三幢以深灰色砖为主，跳浅色砖，东二幢以浅灰色砖为主，跳深灰色砖，高标宿舍则采用珠穆朗玛预制外挂板，深浅灰色组合。为了使建筑群体外观不至于过于理性化、逻辑化，西三幢阳台采用黄色跳块，烘托明快活泼的气氛，体现学生特有的朝气。东二幢花池采用外墙皮被掀起，体现柔美的特点。而高标宿舍则在外墙面饰黄色色块与之呼应。

学生食堂：

建筑面积2300平方米，地上3层。整个建筑采用钢结构外挂预制大板，色彩为灰色系列，与相邻的学生宿舍呼应。立面的波浪折板反映地处温都水城的地域特色和学生活泼好动的性格特征。整体“书架”式的外观使建筑由里到外非常工业化，简单宜行，使用方便。



Dormitory #1#2 Floor Plan　宿舍1号和2号楼平面图

7. Canteen overview
8. Canteen façade
9. Canteen interior
7. 食堂全景
8. 食堂外立面
9. 食堂室内

Canteen Elevation (A)
(Slot: 5mm Wide,
with the Same Colour as Corresponding Façade):
1. Grey metal paint (matt)
2. Greyish white metal paint (glossy)
3. Grey metal paint (matt)
4. Greyish white metal paint (glossy)
5. Folding panel
6. Black aluminium frame
7. Black aluminium swing door

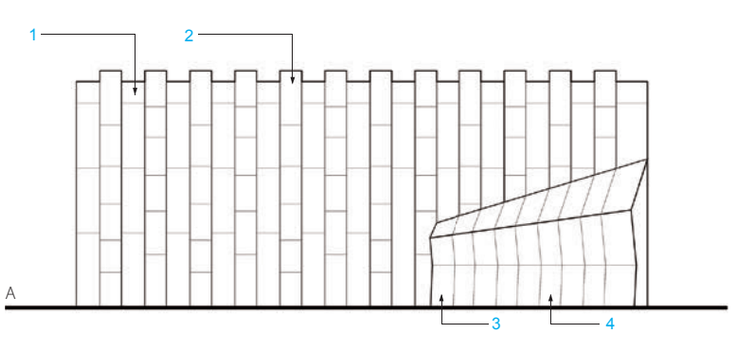
食堂立面图A（分格缝宽5毫米，颜色同相应外墙面）：
1. 灰色金属漆饰面（亚光）
2. 浅灰白金属漆饰面（光面）
3. 灰色金属漆饰面（亚光）
4. 浅灰白金属漆饰面（光面）
5. 异型折板剖面角度
6. 黑色铝合金框
7. 黑色铝合金框平开弹簧门

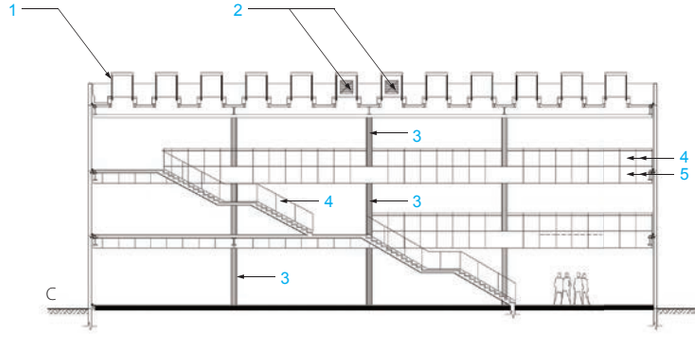
Canteen Section (B):
1. Double glazing, white
2. Smoke outlet, with white louvre inside
3. White
4. Glass panel
5. Grey aluminium edge

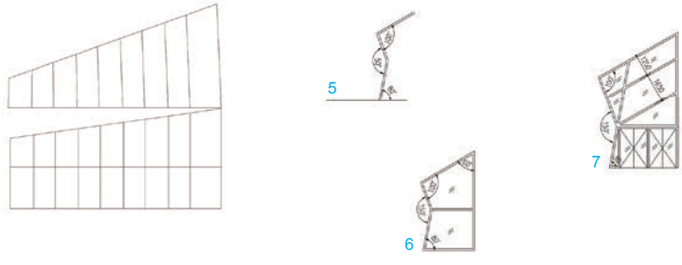
食堂剖面图C:
1. 双层白玻
2. 预留消防排烟风口（700×700），
内罩白色百叶
3. 白色
4. 玻璃栏板
5. 灰色铝塑包边

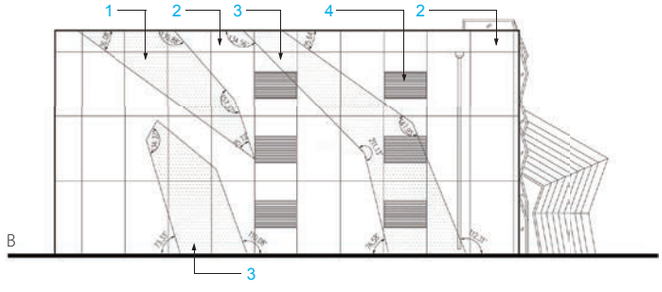
Canteen Elevation (C):
(Slot: 5mm Wide,
with the Same Colour as Corresponding Façade):
1. Yellow metal paint
2. Grey metal paint
3. Blue metal paint
4. Aluminium louvre, on the same surface with façade
Surface paint with the same colour as corresponding façade

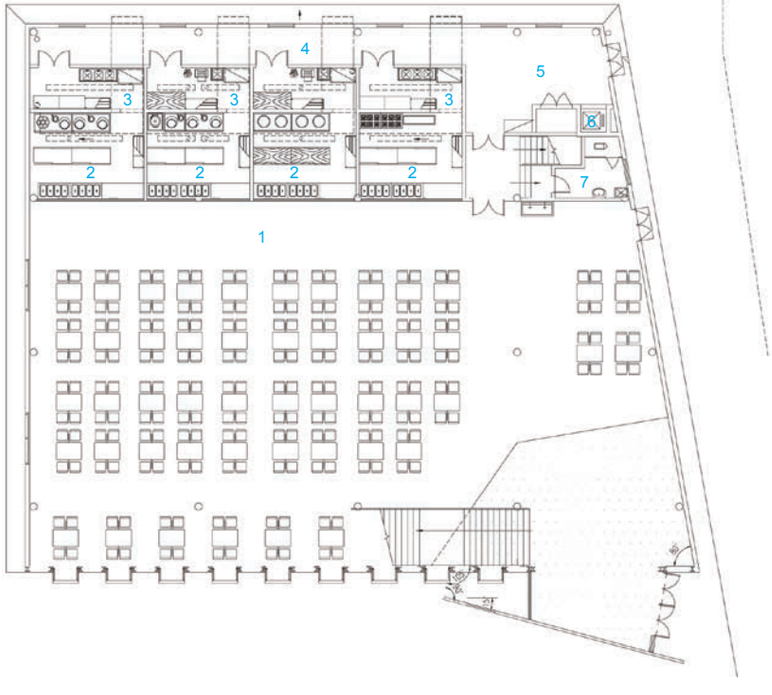
食堂立面图B
（分格缝宽5毫米，颜色同相应外墙面）：
1. 黄色金属漆饰面
2. 灰色金属漆饰面
3. 蓝色金属漆饰面
4. 铝合金百叶，与外墙皮平
饰面喷漆颜色同相应墙面











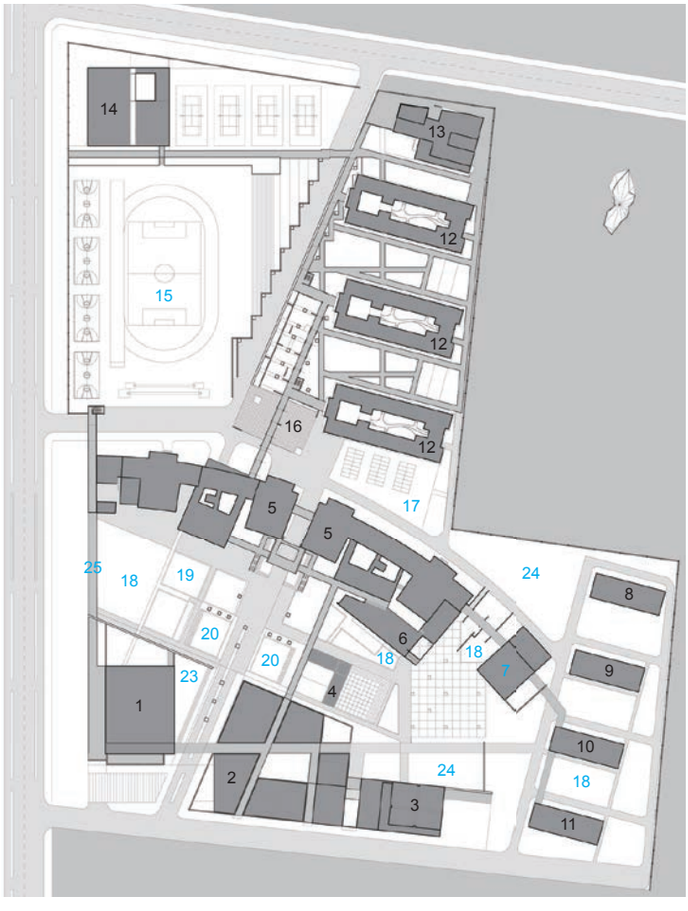
Canteen First Floor Plan:
1. Dining hall
2. Preparation room
3. Preliminary preparation
4. Corridor
5. Wardrobe
6. Lift for food
7. Toilet

食堂二层平面图:
1. 餐厅
2. 操作间
3. 粗加工区
4. 走廊
5. 更衣柜
6. 食梯
7. 卫生间

FINE ARTS SCHOOL IN CHINA CENTRAL ACADEMY OF FINE ARTS
Beijing
SYN Architects

中央美院燕郊校区
北京
SYN建筑事务所

Gross Floor Area: 136,000m²
Design/Completion Time: 2005/2007
Architect: SYN Architects
Photographer: SYN Architects
Client: China Central Arts University
建筑面积：136000平方米
设计/建成时间：2005年/2007年
建筑设计：SYN建筑事务所
摄影师：SYN建筑事务所
业主：中央美术学院



The new 136,000-square-metre campus of the Fine Arts School in China Central Academy of Fine Arts is located to the north-east of Beijing. The existing campus in Beijing couldn't meet the need of development of the Academy, and thus a new campus was initiated, which would accommodate some schools in the Academy such as the Postgraduate School and an attached middle school.

Some buildings of the ensemble had been structurally completed when SYN architects was getting involved in the project. The current completed new buildings consist of extensions to the main building, a refectory, connecting bridges and the entrance building. In addition, the landscape and the sporting fields had been designed and made. Connected with bridges, courtyards are placed among the volumes to bring daylight and fresh air into the building. Big gaps between the studios and the practice rooms and a varying façade design generate the impression of being in an ensemble rather than standing in front of a space-consuming wall.

Site Plan (Left):
1. Library
2. Gallery
3. Complex Building
4. Office Building
5. Teaching Building
6. Terrace
7. Clubhouse
8. Staff Apartment #1
9. Staff Apartment #2
10. Staff Apartment #3
11. Staff Apartment #4
12. Female students dorm
13. Refectory
14. Sports facility
15. Sports field
16. Central plaza
17. Car park
18. Lawn
19. Landscape plaza
20. Waterscape
21. Sunken plaza
22. Sculpture garden
23. Sunken courtyard
24. Greenery
25. Bridges

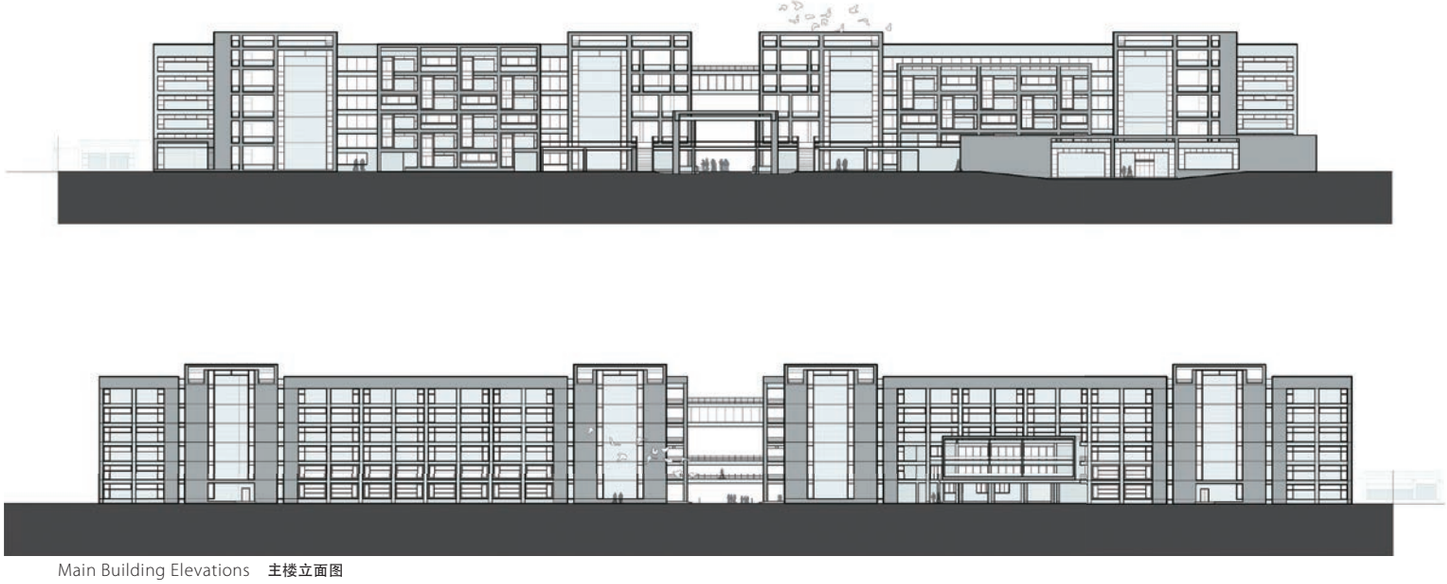
总平面图（左图）：
1. 图书馆
2. 美术馆
3. 综合楼
4. 办公楼
5. 教学楼
6. 平台
7. 会所
8. 职工公寓#1
9. 职工公寓#2
10. 职工公寓#3
11. 职工公寓#4
12. 女生宿舍楼
13. 校内食堂
14. 体育馆
15. 运动场
16. 中心广场
17. 停车场
18. 草坡绿地
19. 景观前广场
20. 水景区域
21. 下沉广场
22. 雕塑景园
23. 下沉庭院
24. 绿地
25. 廊桥

For campus landscape, the architects were inspired by traditional Chinese gardens. A lot of leisure spaces are created among buildings and bridges. Artists as well as students can enjoy the beautiful scenery there, and will be surprised with new discoveries from time to time. Ever-changing views are attached with great importance in design. Living in the campus would be a pleasure, and your perception towards it would be always enriched.

The centre of the existing shell construction was pulled down to create a representative entrance. Three partly glazed bridges generate an attractive situation and will connect the administration building (second construction phase) with the dormitories and the sporting grounds. In the second construction phase there will be a tribune and sport field, as well as an arena, gallery, administration building, houses for teachers and a hotel.

1. Different façade structures make the buildings readable
2. Perspective of front elevation
3. Main entrance detail
4. View through the main entrance to the housing units

1. 多重立面结构丰富了建筑语言
2. 校区的正面全景
3. 主入口局部特写
4. 从主入口可以看到宿舍楼



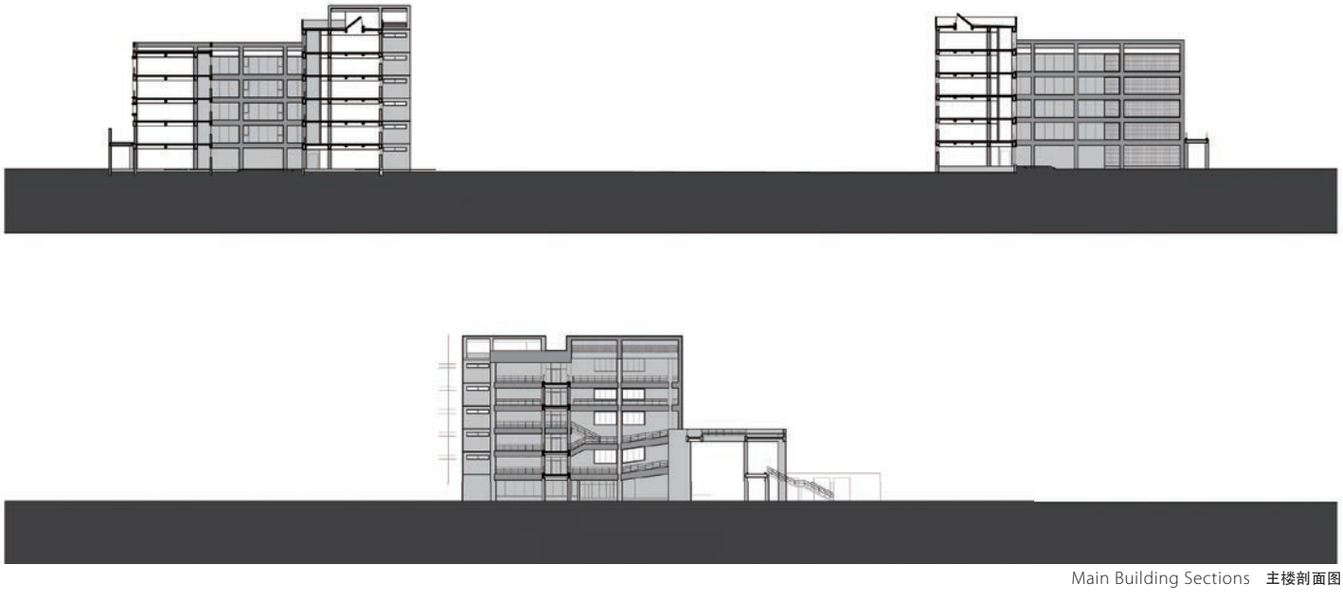
Main Building Elevations **主楼立面图**

中央美术学院燕郊校区位于北京边缘的河北廊坊，与北京行政区划一河之隔，占地面积13.6万平方米。因北京本校发展空间不足，将美院部分院系，研究生院、美院附中等机构迁至燕郊。

本项目为改扩建项目，SYN建筑事务所介入之时，面临的是校区内未竣工的框架混凝土建筑体系，且造型呆板。本设计利用新增建筑从规划调整为主，重新梳理功能与空间，利用对原有主楼新增面积与功能的扩建的同时，去化掉原有部分建筑空间，令原有位于中央阻隔南北的弧形大板变为一个空间丰富南北通透的楼群。并由校区南部主入口开始，创造出新的轴线，通过架空廊桥体系由南至北将无论原有还是新增所有的建筑连在一起。提供舒适安全的步行交通体系的同时，又通过它起到了空间划分与重新介定场所的作用。

与此同时，将中国园林的空间手法运用到建筑与建筑，廊桥与空地，廊桥与建筑物之间，并通过对廊桥结构支承体系的灵活运用，创造出大量的可供艺术家与学生改造与创造的空间，将视线关系作为重点，例如利用借景与对景的手法，将空间联系在一起，使漫步于校园内的人不时有新的发现，并于长时间的校园生活中，不断地增进对空间的理解，并参与改进的全过程。

校门处的原有框架结构推倒重建。廊桥采用部分玻璃结构，将会把行政楼（二期工程）和宿舍、操场连接起来，打造美观、整体的校园印象。二期工程将建成体育场和看台、活动场馆、美术馆、行政楼、教室宿舍、访客宾馆等设施。



Main Building Sections　主楼剖面图

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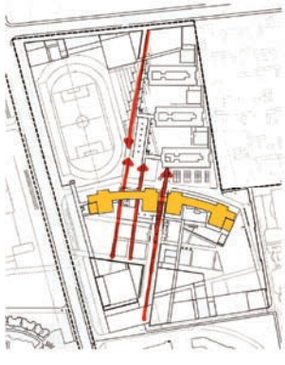
5, 6. Student housing units
7. The Academy after
the first design stage
5, 6. 学生宿舍楼
7. 一期设计后

Area of Main Buildings
主楼位置

Movement Bridges
动线分析

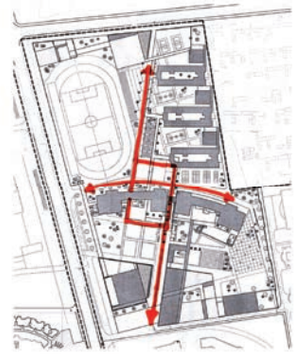
Movement – Free Space
动线与空间

New Buildings – New Plazas
新楼与广场



New Opening
内外交流

Outer Movement
外围动线



Inner Movement
内部动线

Study – Live
南北通透

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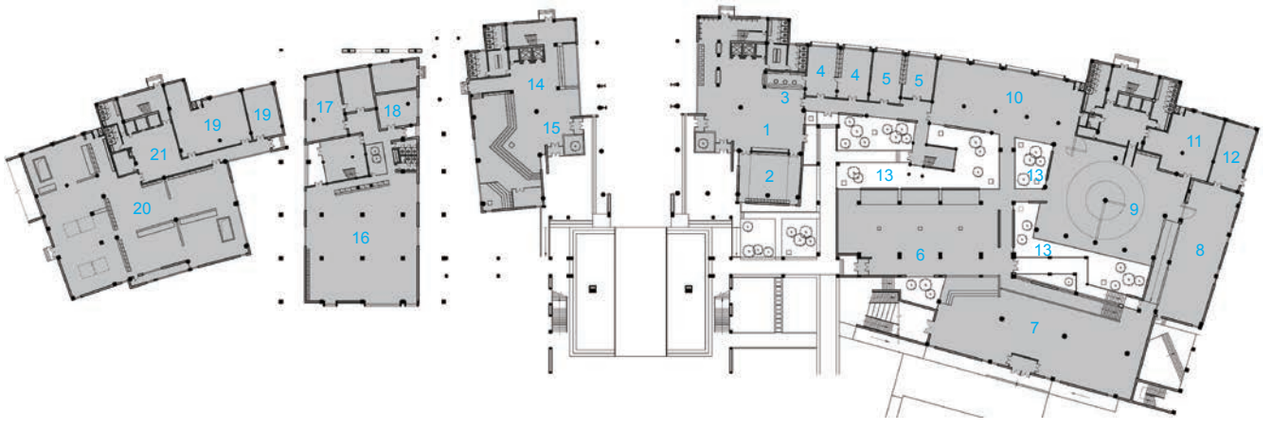
11

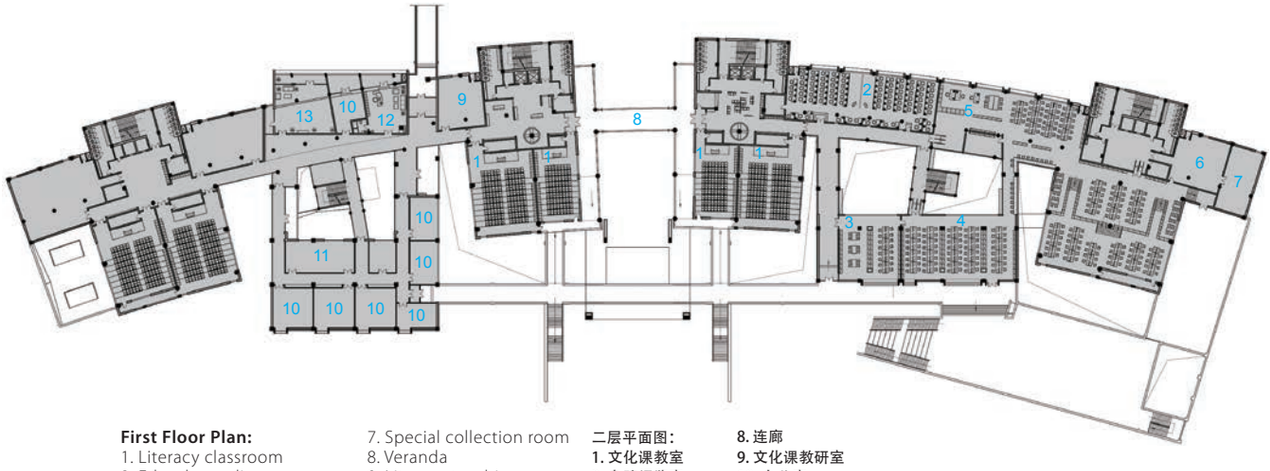
8. Bridges connecting the student housing units with the whole campus
9. Bridges connecting the different areas of the campus
10. Gallery
11. Bridges protecting from sun and rain
12. Courtyard of the student housing units

8. 利用桥梁将学生宿舍楼与整个校园联系起来
9. 桥梁联系起校园各个部分
10. 美术馆
11. 桥梁保护下方免受雨淋日晒
12. 学生宿舍楼围合的院落



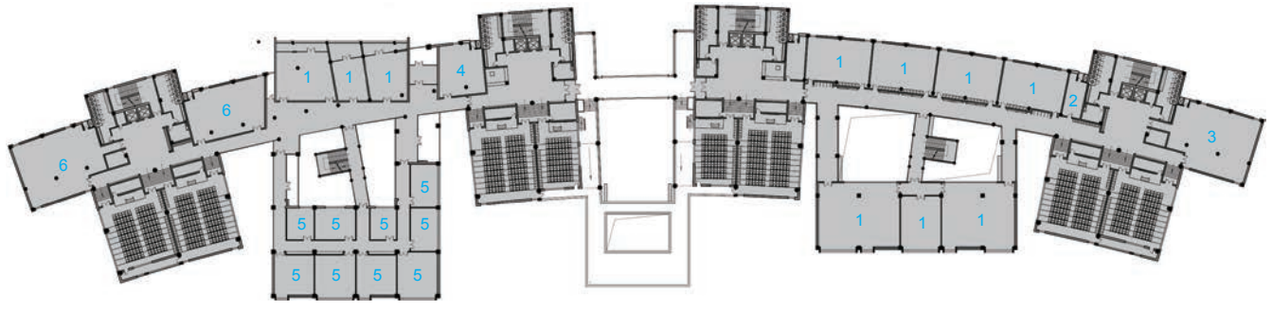
Ground Floor Plan:
1. East vestibule
2. Reception office
3. Reception
4. Dean's office
5. Gallery office
6. Exhibition Hall A
7. Exhibition Hall B
8. Exhibition Hall C
9. Exhibition Hall D
10. Exhibition Hall E
11. Temporary storeroom
12. Exhibition hall storeroom
13. Courtyard
14. West vestibule
15. Shop (art materials and books)
16. Engraving studio
17. Engraving teaching and research office
18. Service Centre
19. Sculpture teaching and research office
20. Sculpture studio
21. Washing room

一层平面图:
1. 东门厅
2. 接待处办公室
3. 接待处
4. 教务处办公室
5. 美术馆办公室
6. 展览厅A
7. 展览厅B
8. 展览厅C
9. 展览厅D
10. 展览厅E
11. 临时库房
12. 展厅库房
13. 庭院
14. 西门厅
15. 美术用品书店
16. 版画工作室
17. 版画教研室
18. 职能中心
19. 雕塑教研室
20. 雕塑工作室
21. 水房



First Floor Plan:
1. Literacy classroom
2. E-books reading room
3. Teacher's reading room
4. Picture album reading room
5. Office and catalogue room
6. Reading room
7. Special collection room
8. Veranda
9. Literacy teaching and research office
10. Office
11. Meeting room
12. President office
13. Guest reception room

二层平面图:
1. 文化课教室
2. 电脑阅览室
3. 教师阅览室
4. 画册阅览室
5. 办公室与目录厅
6. 阅览室
7. 特藏库
8. 连廊
9. 文化课教研室
10. 办公室
11. 会议室
12. 校长办公室
13. 外宾接待室



Second Floor Plan:
1. Painting room
2. Pre-function room
3. Skill classroom
4. Teaching tools storeroom
5. Office
6. Students' works collection room

三层平面图:
1. 画室
2. 教室预备室
3. 技法教室
4. 教具库房
5. 办公室
6. 学生留校作品库

12

ART GALLERY IN SHENZHEN UNIVERSITY
Shenzhen, Guangzhou Province
QIN Li / QL Studio

深圳大学艺术村
广州省 深圳市 南山区 深圳大学
覃力 / QL建筑工作室

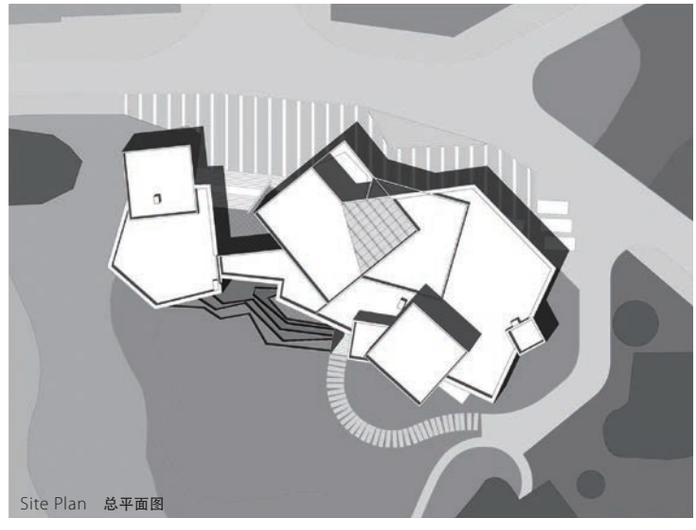
Gross Floor Area: 2,400m²
Design/Completion Time: 2007/2008
Architect: QIN Li / QL Studio
Design Team: LUO Jingjing, WEN Yaqiao
Photographer: QIN Li
Client: Shenzhen University
建筑面积：2400平方米
设计/建成时间：2007年/2008年
建筑设计：覃力 / QL建筑工作室
设计团队：骆静静，温雅乔
摄影师：覃力
业主：深圳大学

The Art Gallery is located in Shenzhen University campus, with its north side facing the thoroughfare at the north entrance of the university. The gallery serves for students and professors in the Department of Art. The site was originally occupied by the iconic "Houses of Ghost" designed by Li Ruisheng, professor of the Department of Art.

Professor Li is not an architect himself, and the "Houses of Ghost" he designed were a complex with an inner courtyard in which lychee and bamboo are planted. The site, with a significant height difference (the west side higher than the east), enjoys a very beautiful environment. The houses were built with rubble stone, creating a unique silhouette. They used to be a well-known artistic studio in the campus, even in the city of Shenzhen. Due to some reason related to property right, the main building was demolished and temporary music classrooms and exhibition hall were built. The stone houses at the back of the courtyard were retained, and the new Art Gallery was built on the plot of the original main building facing the north entrance. The site along the main ring road in the campus plays a significant role of landscaping for the university.

Due to the specific site condition, particularly the height difference, the architects chose flexible building forms to cope with the site. The architecture composed of small-scale modules is identical to the original "Houses of Ghost". A series of cubic modules, with different sizes and directions, constitute an irregular, complex composition. In this way, the whole architecture is integrated into the context, offering a strong sense of modernity. The irregular layout and flexible composition contribute to unconventional interior spaces, enlarge the exposed surfaces, and attract more attention with the unique silhouette. Therefore, the Art Gallery, though small in size, is given a unique identity, which makes it an eye-catching spot at the north entrance of the university.

The architects took advantage of the height difference of the site, and made a three-dimensional integration of the architectural spaces and the surroundings. Big steps are designed in front of the main entrance, which leads to the atrium on the first floor of the Art Gallery. The main exhibition hall on the ground floor is connected to the inner courtyard by the outdoor sunken area (also used for exhibition). The exhibition halls are positioned in a linear way, simple and clear. The lobby and the lounge, with windows opening to the lychee forest, enjoy splendid views, while the interiors are closed space for the privacy of exhibitions. The exhibition spaces are organised in a dynamic, three-dimensional way, inter-connected to form a ring. In addition, several aerial corridors and two-storey spaces are


Site Plan 总平面图

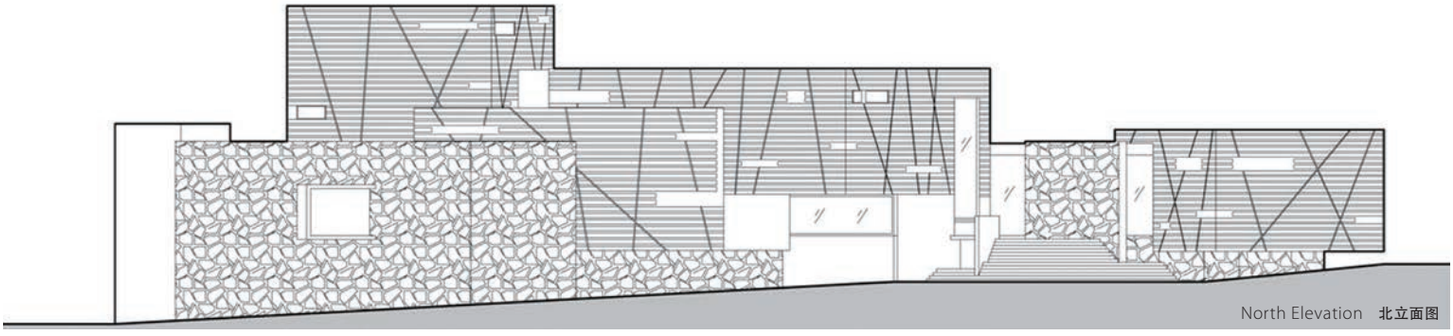
2

created to enrich the interior because the architects believe that exhibition architecture should have various forms of spaces.

The newly built Art Gallery is part of the so-called "Art Village" in which several rubble stone houses are retained. Therefore, the architects have to establish a proper relationship between the Art Gallery and the old buildings, in terms of building form and scale. Besides, the innovative elements in the old buildings, such as material and construction technique, should be kept in new architecture. Hence, with a budget of only 3,000,000 RMB, the architects decided to use cheap natural materials such as rubble stone and timber. In this way, the new building and the old ones are consistent in material. Meanwhile, artificial material – expansive frameless glass – is adopted to combine with the natural materials, making the spaces feel more open and modern.

1. Northeast façade
2. Bird's-eye view
3. Perspective
4. Main entrance
5. Southwest view
6. Southeast view
7. Courtyard

1. 艺术村的东北立面
2. 鸟瞰图
3. 艺术村全景
4. 主入口
5. 西南一角
6. 东南一角
7. 后院



North Elevation 北立面图

3

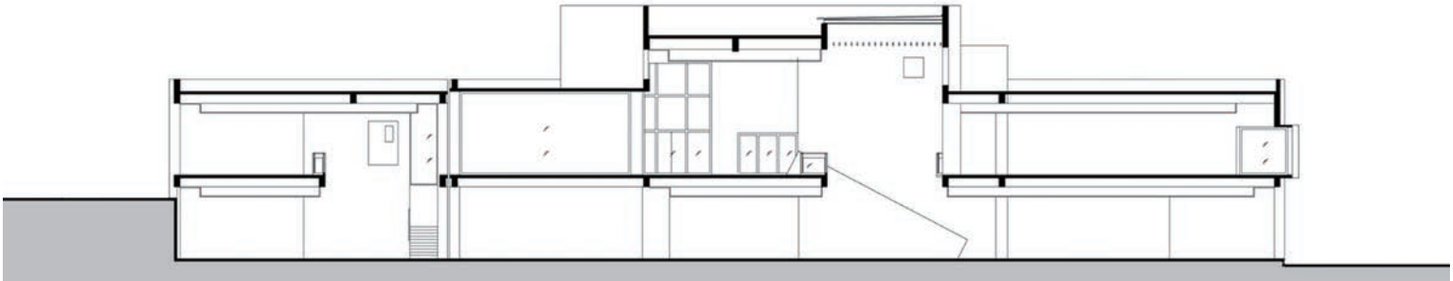
深大艺术村地处深圳大学校园内，北面正对着深圳大学的北门主干道，地理位置十分显要。所谓艺术村，实际上是为深圳大学艺术系师生服务的校内美术馆。艺术村的建设基地，原为艺术系教师李瑞生先生设计建造的、很有特色的“鬼屋”的原址。

并非建筑师的李先生自己动手设计建造的“鬼屋”，原是一组建筑，自成院落，院内有大片的荔枝林和竹丛，地形东低西高，有较大的高差，环境十分幽美。建筑用毛石砌筑，平面形态随地形自由变化，造型独特，曾经是深圳大学乃至深圳市的一个极有个性的艺术家工作室。后来由于产权问题，主体建筑拆除了，学校在原址上临时修建了音乐教室和简易的展厅。不过，院落中后面的几座石砌建筑仍然保留了下来，而新建的美术馆就选在原来主体建筑的位置上，面对北校门，沿着校内环路邻路而建，是校园中一处重要的景观节点。

由于这样特殊的场所条件和极不规则高低起伏的地形特点，建筑师在设计时便考虑以自由变化的建筑形式来适应环境，用小尺度的形体组合，延续原来“鬼屋”的造型特征。用一系列大小不同、方向各异的方形，组成不规则的复杂形态，使建筑体量化整为零融于环境，给人以强烈的现代感。这种不规则的平面和灵活的造型形态，不但可以营造出不同于常态的内部空间，增加展示面的长度，而且还能够以独特的造型去吸引人们的注意，使这座规模不大，但造型却极有个性的建筑，成为深圳大学北校门内轴线上引人注目的底景。

在建筑空间组织上，建筑师利用原有地形的高差，使建筑空间与环境的结合立体化。正面主入口前设有大台阶，可以直接进入美术馆二层的前厅。一层的主展厅则通过下沉式的室外展示场地，与建筑围合的内部庭院相连。各展厅之间呈线性连接，流线简明顺畅。序厅和休憩空间面向荔枝林开窗，拥有非常好的景观，而展厅内部却相对封闭以利于展品的展示。展室内部的组织则采用动态的、立体化的处理方法，使各展室相互穿插形成环状，在建筑内部还多处设置了架空廊道和拔空空间，使空间效果富于变化，体现出展览建筑的文化特质。

新建的美术馆就整个艺术村来说，只是其中的一个组成部分，艺术村中尚保留有几座原来的毛石建筑。因此，美术馆的设计除了从建筑形态上、建筑体量上，要处理好新、旧建筑之间的关系之外，还应该从建筑材料和建造方式上，也能够使新建筑从本质上去传承那些有创意的东西。于是建筑师在造价只有300万元的情况下，大量采用了非常廉价的毛石和木材等自然材料，通过材料联想这种抽象性传承，来表现场所环境中所特有的“乡土感”。同时，建筑师也适当使用了大片的无框玻璃窗，让人工材料与自然材料相结合，使空间更加通透，从而赋予该建筑以强烈的时代感。



Section 剖面图

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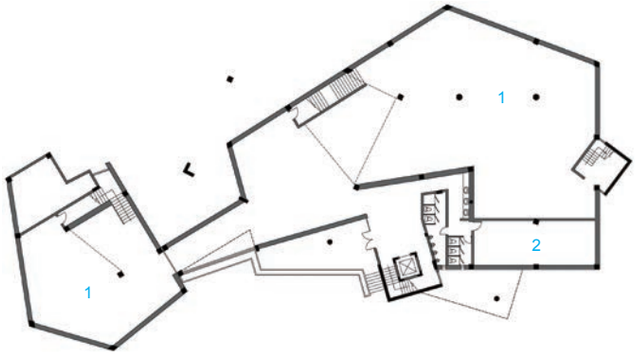
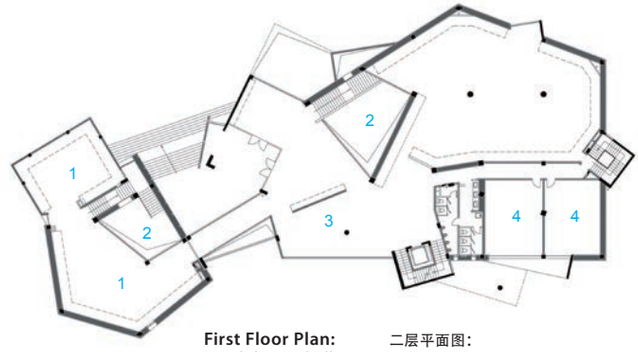
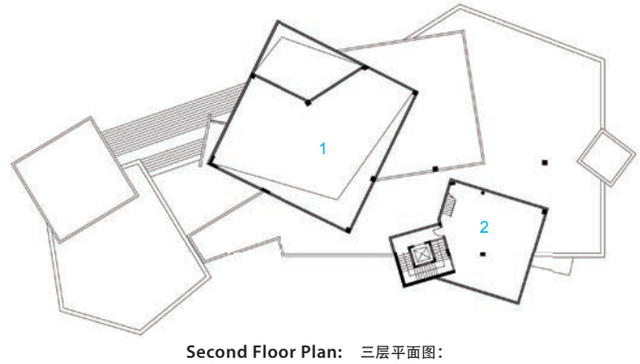
8. Courtyard landscape
9. Natural lighting in the exhibition hall
8. 后院的景观
9. 展厅的自然采光



Ground Floor Plan: 一层平面图:
1. Exhibition hall **1.** 展厅
2. Electric room **2.** 配电房



First Floor Plan: 二层平面图:
1. Exhibition hall **1.** 展厅
2. Void **2.** 展厅上空
3. Lounge **3.** 休息厅
4. Conversation room **4.** 洽谈室



Second Floor Plan: 三层平面图:
1. Void **1.** 二层上空
2. Storage **2.** 储藏室

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LEO KOGUAN BUILDING, FACULTY OF LAW, PEKING UNIVERSITY
Beijing
Andrea Destefanis, Filippo Gabbiani / Kokaistudios

北京大学法学院凯原楼
北京
安德烈亚・戴特法尼斯，菲利普・加布亚尼 / Kokaistudios工作室

Gross Floor Area: 10,000m²
Completion Time: 2010
Architect: Andrea Destefanis, Filippo Gabbiani / Kokaistudios
Project Responsible: LI Wei
Design Team: FANG Weiyi, LIU Wenwen, YU Feng
Structural Engineer/Mechanics & Electricity: BIAD
Photographer: Charlie Xia
Client: The Leo KoGuan Foundation, the United States of America
建筑面积：10000平方米
建成时间：2010年
建筑设计：安德烈亚・戴特法尼斯，菲利普・加布亚尼 / Kokaistudios工作室
项目负责人：李伟
设计团队：方惟一，刘雯雯，俞峰
机电设计/结构设计：BIAD 北京市建筑设计研究院
摄影师：查理・夏
业主：美国廖凯原基金会

Balance Architecture with Light

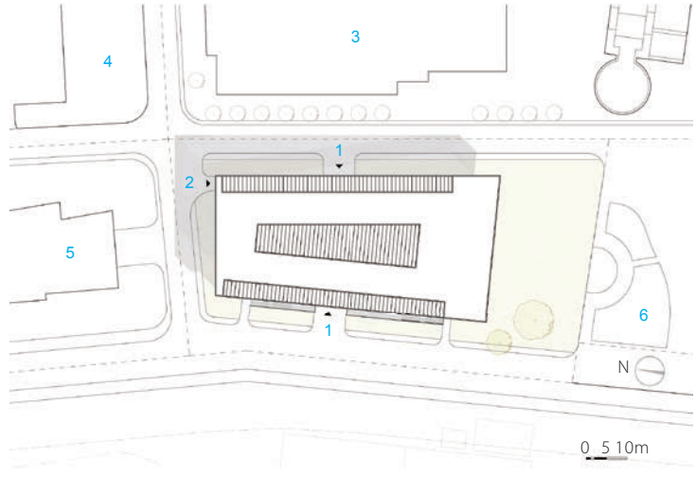
A challenging project for the most prestigious university in China in the heart of its historical campus.

In 2009, a prestigious American Foundation (The Leo KoGuan Foundation) and Peking University invited Kokaistudios to design the building for the new faculty of law located in a prestigious location within the historical campus of China leading university. This particular site, where the pagoda symbol of the university is standing, required considerable effort in terms of design in order to find architectural answers that could satisfy and meld in a harmonious way the heritage elements, the beautiful natural environment and the new contemporary building. This prestigious project is considered the milestone of a new era for Peking University, and a symbol for better and more environmentally sustainable standard of living for the future university community and for architectural buildings within that community.

This project has been conceived on a rigid volumetric shape imposed by the strict regulation protecting the historical site and at the same time by the necessity to fulfill all the functional requirements of the new faculty. The rigorous style requested to be accepted by the large number of heritage commissions have been interpreted in a creative way by Kokaistudios by proposing an elegant use of few materials, concrete plasters and local stones with capabilities to transmit daylight and a clever use of skylights and sinking gardens in order to increase the use of natural light and thermal efficiency of the building. Kokaistudios transformed the façades to become light filters and diffusing soft daylight all over the interiors. The entire system of internal spaces has been designed by the team so as to upgrade the standards of working, living, and studying of the future professors and students, using sustainable materials and creating aggregation facilities and spaces that could satisfy the flexible demands of the faculty in the future.

Site Plan:
1. Entrance
2. Access to garage
3. Micro-electronics Building
4. Building #1, Faculty of Law
5. Guanghua School of Management, phase II
6. Green plaza

总平面图：
1. 入口
2. 车库入口
3. 微电子大厦
4. 法学院一号楼
5. 光华管理学院二期
6. 广场绿化



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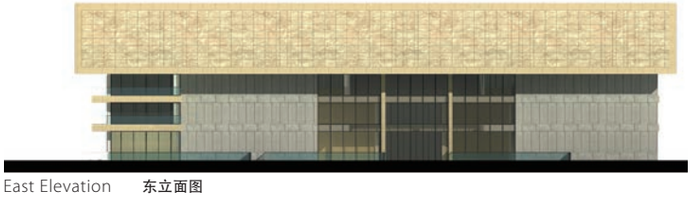
建筑与光的完美平衡——中国首屈一指的高等学府历史校区内的设计挑战

2009年，来自美国的颇具威望的廖凯原基金会携北京大学共同邀请Kokaistudios工作室为北大法学院设计新的学院楼，选址就在北大历史悠久的校区内。北京大学标志性的博雅塔矗立在旁，校区内自然怡人的氛围造就了本项目特殊的区位，也要求设计师必须不遗余力地寻求一种可以平衡项目现代建筑风格和校区历史元素和自然环境的建筑方案。本项目于2010年中竣工，这对北京大学而言无疑具有里程碑式的意义，不仅为校区内建筑本身，也为未来大学园区内更环保和可持续性发展的生活方式设立了全新的标准。

由于受到北大历史校区严格的保护规范要求，本项目在设计时不得不采用相对严格的体量形态，同时又需具备学院所必须的功能要求。Kokaistudios采用创造性的设计手法，对这种看似严格的建筑形态做了全新的诠释，使其能通过众多遗产保护委员会专家的审批。具体而言，在建筑取材上Kokaistudios仅采用混凝土砂浆和本地石材组合，一方面能有效地传导日光，同时巧妙地利用天窗和下沉式花园的设计，使得室内照明尽可能地利用到自然光源。Kokaistudios创造性地将建筑外立面转换成滤光器，有效地柔化了室内光线。室内整体空间系统通过采用环保材料，营造系统集合性的设施来满足未来学院灵活的功能需求，这些精心的设计最大程度上提升了法学院师生工作学习和科研活动和生活的标准。

North Elevation 北立面图

South Elevation 南立面图



East Elevation 东立面图

West Elevation 西立面图

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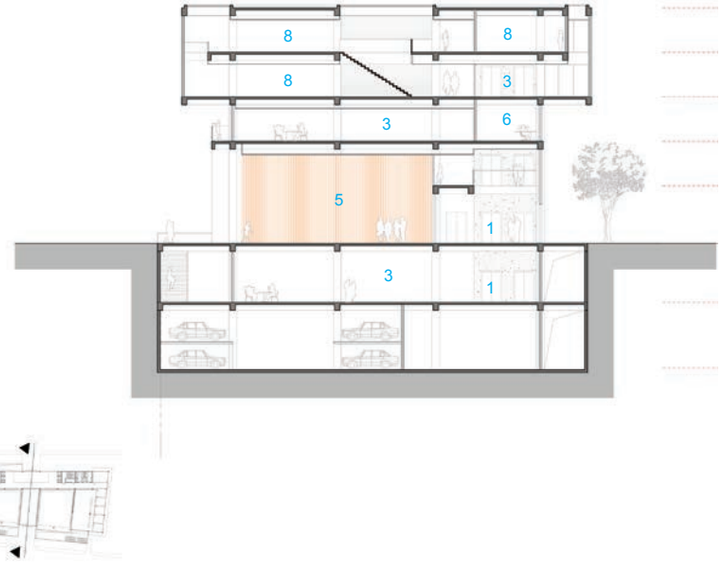
4

1. Façade night view
2. Building daytime view
3. Building night view
4. Main façade detail
5. Sunken garden
6. Double-height hallway

1. 外立面夜景
2. 日间全景
3. 外观夜景
4. 主立面近景
5. 下沉庭院
6. 两层通高的过道

Sections (Right and Facing Below):
1. Lobby
2. Passage/extension of Simulated Court
3. Rest
4. Info
5. Simulated Court
6. Office
7. Study room
8. Reading room
9. M&E room

剖面图（右图和对页下图）：
1. 门厅
2. 过厅（模拟法庭延伸）
3. 休息厅
4. 问询
5. 模拟法庭
6. 办公室
7. 研究室
8. 阅览室
9. 机房



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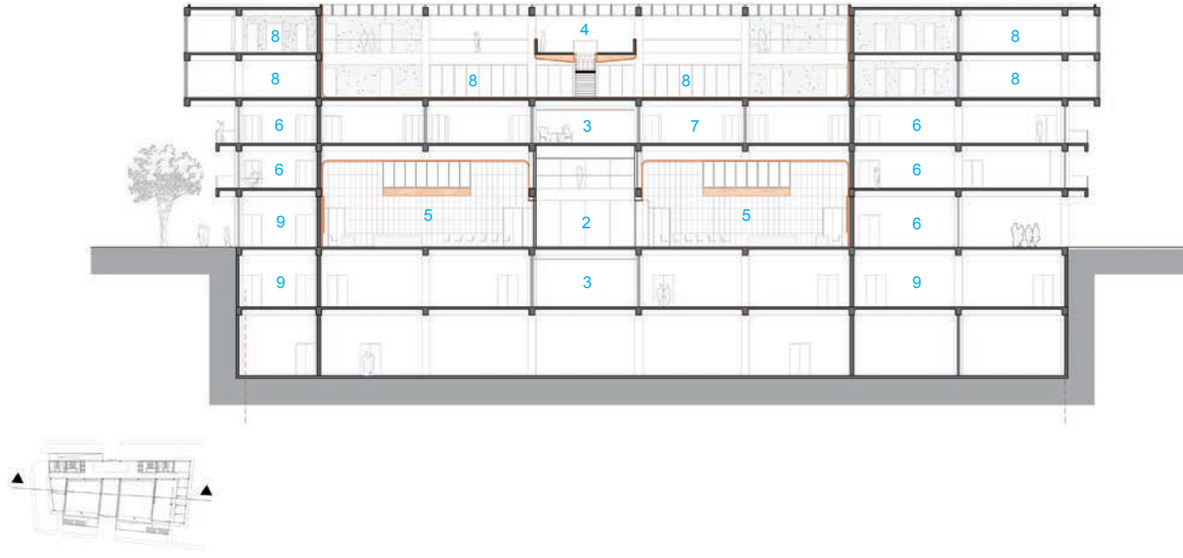


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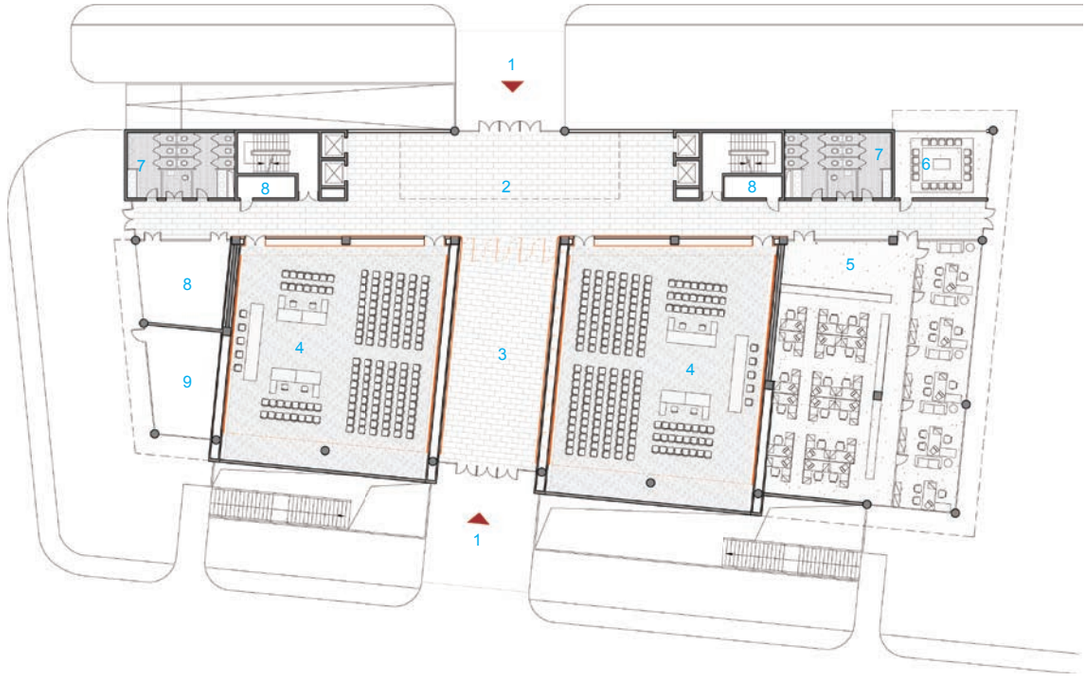
7. Entrance lobby
8. Court hall
7. 入口大厅
8. 模拟法庭大厅

Ground Floor Plan: **一层平面图：**
1. Main entrance **1. 主入口**
2. Lobby **2. 门厅**
3. Passage/extension of Simulated Court **3. 过厅（模拟法庭延伸）**
4. Simulated Court **4. 模拟法庭**
5. Office **5. 办公室**
6. Meeting room **6. 会议室**
7. Toilet **7. 卫生间**
8. M&E room **8. 机房**
9. Fire control centre **9. 消防控制中心**



Third Floor Plan:
1. Rest
2. Office
3. Meeting room
4. Study room
5. Toilet
6. M&E room

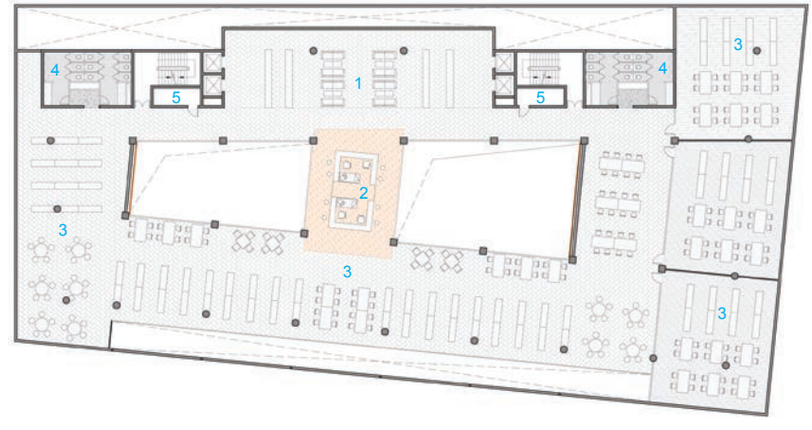
三层平面图：
1. 休息厅
2. 办公室
3. 会议室
4. 研究室
5. 卫生间
6. 机房

9, 10. Library
9, 10. 图书馆

Fourth Floor Plan: **四层平面图:**
1. Rest **1. 休息厅**
2. Info **2. 问询**
3. Office **3. 办公室**
4. Reading room **4. 阅览室**
5. Toilet **5. 卫生间**
6. M&E room **6. 机房**

Fifth Floor Plan:
1. Rest
2. Info
3. Reading room
4. Toilet
5. M&E room

五层平面图：
1. 休息厅
2. 问询
3. 阅览室
4. 卫生间
5. 机房



TEACHING COMPLEX AT HUNAN UNIVERSITY

Changsha City, Hunan Province
Hunan University Design Institute, Co., Ltd.

湖南大学综合教学楼

湖南省 长沙市 岳麓区
湖南大学设计研究院有限公司

Site Area: 12,582m²
Gross Floor Area: 20,997m²
Design/Completion Time: 2007/2009
Architect: Hunan University Design Institute, Co., Ltd.
Design Team: WEI Chunyu, LI Xu, YANG Yuehua
Photographer: QIANG Wei, XU Haohao
Client: Hunan University
用地面积：12582平方米
总建筑面积：20997平方米
设计/建成时间：2007年/2009年
建筑设计：湖南大学设计研究院有限公司
设计团队：魏春雨，李煦，杨跃华
摄影师：强伟，许昊皓
业主：湖南大学

Background

Hunan University has a long history. The existing campus occupies an area of 1,462,000m², with a gross floor area of 819,000m², providing teaching, research and living facilities for the University. In recent years the University has been developing with a fast pace, and a new campus was in need to meet requirements of teaching and research. Therefore, a site of 138,000m² south of the existing campus was chosen to hold the new campus, where the Teaching Complex was the first architecture to be built, setting a context for future construction of the campus. Design of the project started from May 2007, and construction was completed on August 2008.

Master Plan

The existing campus was planned with two axes perpendicular to each other: the one that starts from Yuelu Academy and ends at the entrance near Xiang River is called "art axis", and the other is called "science axis", from which the new campus plan took reference. In the new campus, the axis starts from Faculty of Law, goes through School of Civil Engineering, Engineering Laboratory, College of Software, Science and Technology Building, and ends at Teaching Complex. The axis makes a turn at the playing field, organising the spaces in sequence. The Teaching Complex was sited at the south part of the new campus, with Fubuhe Road to the west (with disorderly commercial facilities on the other side of the road), Science and Technology Building to the south (in plan), Tianma Mountain to the east, and Student Apartments to the south. The Teaching Complex acts as the final end of the axis.

Layout and Circulation

The Teaching Complex, as the name suggests, provides teaching facilities for the University, including classrooms at different sizes (for 60, 100, 150 and 300 people), individual study rooms, and offices, bicycle parking on air, totaling approx. 20,000m² in floor area. The general layout is I-shaped, with the vertical line spanning 116.64m and the horizontal 53.88m. Horizontal circulation is completed with corridors and bridges, being, continuous and active. Eight staircases are well distributed, providing efficient vertical circulation.

The site has a small height difference: the northwest part of the site is 2.25m lower than the Fubuhe Road, and the southwest part is on the same level with the road. The complex separates pedestrians and vehicles according to the existing condition of the site. The plaza on the west is connected with the Fubuhe Road, and pedestrians are guided to the ground floor hallway by steps. Vehicles enter the campus from the road on the southwest, and are parked by the road. Nearby is a bicycle parking lot on air, with entry and exit conveniently placed near the campus entrance. In this way, interference between pedestrians and vehicles is minimised.

Site Plan
总平面图

Design with Logic

Logic in Design Theory: Group Composition

Group Composition explores how to integrate individual buildings into a group as a whole. In an era when university buildings need flexibility to meet new requirements, such a theory naturally came out. It is applied to the new campus plan to achieve a high efficiency in resource consumption. Group composition goes well with contemporary education concepts, which require easy interdisciplinary communication. Meanwhile, the integration of buildings must result in the re-integration of the building context, where landscapes overlap and various interesting places are created. The Teaching Complex is the starting point in the master plan of the new campus, and it doesn't have a complicated architectural form; instead, it acts as a compositional element in the group, though being identical, and prepares for the future "organic growing" of the group.

Logic in the Site: Turning Sideways

How to make the complex with a gross floor area of about 20,000m^2 integrate into the existing site is the primary issue the architects face; there are direct or indirect requirements from the site, which are quite difficult to coordinate. If you are confined within the site, probably your mind would be restricted; however, when you see the site as a part of the city, you would be enlightened at once. The Tianma Mountain on the east is the key in solving the primary issue. It should never be the landscape resource solely for the site, and therefore, the architects decided to let the complex turn sideways in order not to block sight of the beautiful mountain scenery. In this way, the mountain landscape returns to serve the whole city. In addition, the linear composition of the complex acts as guidance to lead your sight towards the mountain. Therefore, the landscape is strengthened by the architecture, while the former acts as a background for the latter, giving prominence to its outline. The contradiction between the architecture and the mountain is solved and the two coexist in a harmonious way.

Logic in Composition: Linear Interspersion

Due to the requirements of group composition and different programmes, linear composition became the best solution. An aerial view shows clearly that the composition is quite easy: two square blocks perpendicular to urban roads compose the main part of the

2

1. North façade
2. Northeast perspective
1. 建筑北立面
2. 建筑东北角透视

complex; the block at the entrance is a horizontal one and projects out on the north, connecting the main bodies directly and forming a three-section compound (traditional Chinese residential composition); the two parts near the mountain are indirectly connected by a linking bridge, which is the best place to have a sweeping view of the mountain. The two extruded sides of the entrance seem to welcome visitors by a hug. The part in-between seems to recede with good arrangement, reducing psychosocial pressure towards the urban space. Seen from the urban road, the linear interspersion with twist and turn makes the complex vary in appearance. Flower terraces, steps, ramps, etc. follow the composition of the complex, and are interspersed in a pleasant way, echoing the wavy mountain in the distance. Meanwhile, the linear interspersion of the complex sets the base of the buildings and makes them "embedded" into the site. The comparatively complicated base forms some blurry places within the complex, which are not created on purpose and thus have no definite functions, but here are places where beautiful stories happen…

Logic in Space: Penetration

The architectural compound forms various enclosed spaces: the entrance plaza is open and active, with guiding steps; the inner courtyard is quiet and private, where, unconventionally, greenery is not the choice; instead, paving is done with the same material as the building façade to achieve a unified visual effect; seen from the courtyard, view of the mountain is framed by the building outlines, like the courtyard in Salk Institute by Louis Kahn. The big plaza at the entrance, the plaza before the complex and the plazas among the buildings are created at different levels and thus enrich the environment of the complex. Meanwhile, big steps, terraces and linking bridges are adopted to have a three-dimensional connection among buildings in the complex. In this way, spaces above and under ground, interior and exterior, building and scenery, people and architecture penetrate each other, forming a subtle relationship. Gardens on air are created by having "subtraction" on the façades, enriching the environment and creating a close relationship with the Tianma Mountain and the campus landscape. Penetration not only enriches spaces of the complex, but also improves its eco performance. The levels built on stilts and the open-air courtyards are combined to connect interior and exterior spaces together, achieving natural ventilation and a good cooling effect. In the meanwhile, inspired by traditional residences in the west of Hunan Province – the stilted house, the architects draw daylight and natural air in from side halls, improving micro-climate effectively. Compared with expensive eco-technology, these plain solutions are suitable for current circumstances in China, and reveal the architects attempts to explore local architecture in their design.

Logic in Material: Granitic Plaster

The architects are faced with two issues: one is how to embed local culture in the architecture, and the other is how to cope with the limited budget. Hunan University has a history of more than 1,000 years, so the architecture must show respect to local culture. Simple imitation of the old buildings in the existing campus or repetition of its iconic landmarks would be a superficial solution. Moreover, with a limited budget, distortion of building form or using new materials to present a modern building would be impossible. Finally, material became the breakthrough point. After making every effort in seeking and comparing materials, the architects chose granitic plaster for the façades, the material used in the old buildings in the existing campus. With natural light, granitic plaster has diffuse reflection and refraction effects, which present different colours and textures in seasons with different weathers and angles of light. Moreover, the granitic plaster surfaces make the buildings look worn out and thus integrate into the environment naturally. It helps define a field with a unified material and texture, a field where the architecture "grows out". With the rough surfaces, the buildings seem a bit primitive, and clear glass partially embedded into the buildings creates a dramatic effect. This unconventional approach makes the complex identical and distinguishes it from the disorderly surrounding buildings. The strip windows (W:L=1:4) are regularly and vertically arranged on the façades. The openings are caved in dramatically to create long shadows, and the "caves" make the complex look like a giant sculpture. There are parts inserted into or extruded from the façades, adding variation to the unified context. You can find traces of the old campus in the complex, while the contemporary composition reveals its status as a landmark in the region.

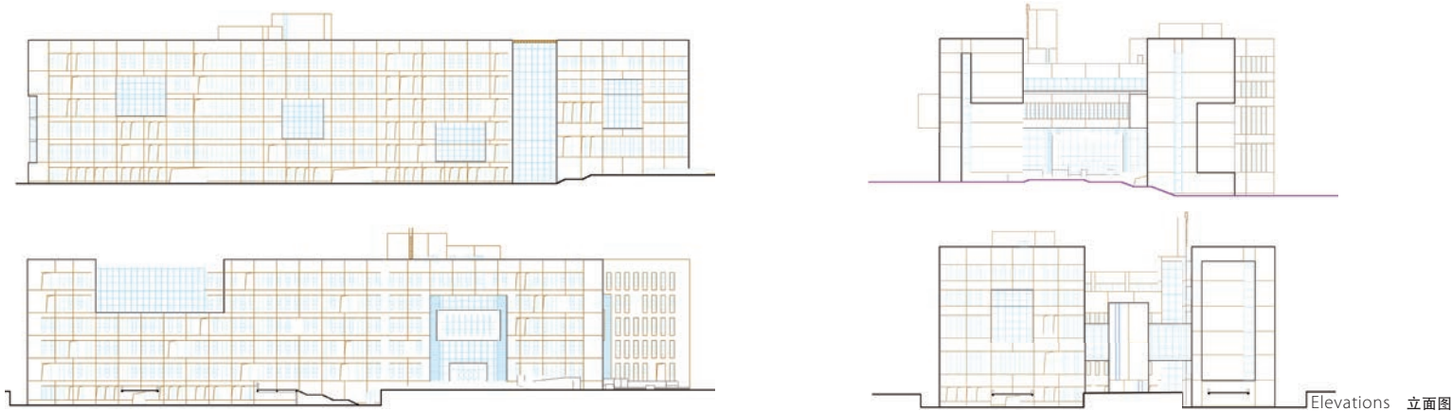
3

Conclusion

The logic in design makes the architecture somewhat self-disciplinary, revealing the architects' exploration in place, space, material, and the like. Logic guarantees architectural quality, and at times you would be unexpectedly touched. After completion, you can observe people enjoying leisure near the Teaching Complex. They stand, sit or recline near the flower terraces, on the steps, and in the roof garden. They can read, talk and look far into the distance with warm sunshine. These scenes go beyond the original conception of the architects, but they are quite glad to see.

3. Southwest perspective
4. Southeast perspective
5. Main entrance on the west
6. Courtyard on the east

3. 建筑西南角透视
4. 建筑东南角透视
5. 西面主入口透视
6. 东面庭院



Elevations 立面图

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5

项目概况

湖南大学是一座历史悠久的学校，原有校区占地面积146.2万平方米，校舍建筑面积81.9万平方米，为教学、科研、居住的混合区。随着学校发展，原有的校舍建筑已经不能满足教学和科研要求。学校将原有校区南部的13.8万平方米作为新的教学区，而综合教学楼是新校区的第一栋修建的建筑，作为坐标原点，对整个新校区的后续建筑的建设具有重要的参考意义。湖南大学综合教学楼项目从2007年5月开始设计，2008年8月建成，总体历时约一年半。

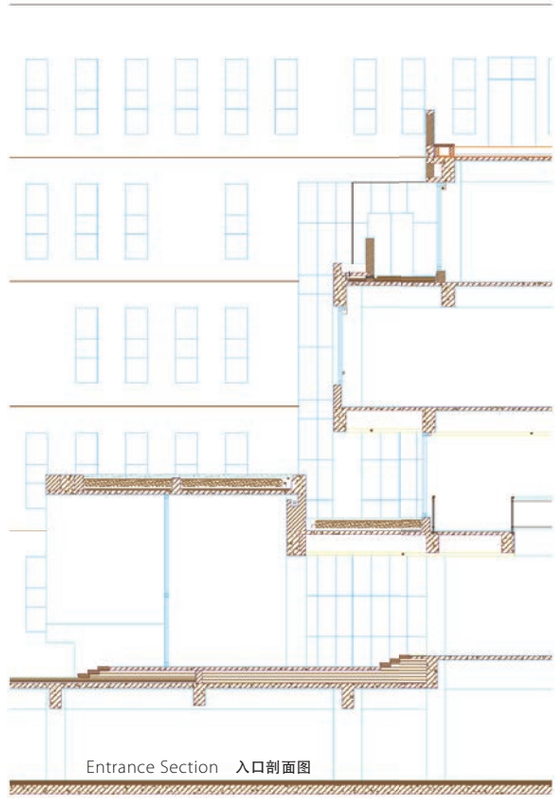
总体规划

湖南大学老校区具有相互垂直的两条轴线：一条为起始于岳麓书院，收于湘江畔校门的文化轴；另一条为科技轴；新校区空间规划上延续了湖大原有的科技轴线：法学院一土木学院一工程实验大楼一软件学院一理工大楼一综合教学楼，该轴线在运动场处进行了扭转，是一个完整而又富于变化的空间序列。综合教学楼基地位于新校区南端，西临阜埠河路，隔路相望的是一些杂乱的商业设施，北面为规划中理工科教学楼，东向毗邻天马山，南面为学生公寓。该建筑是整条轴线的收头，其重要性不言而喻。

功能布局与交通组织

本建筑为湖南大学的综合教学楼，主要承担湖南大学的基础教学任务，功能设置各种规模（包括60人、100人、150人、300人）的教室、自习室、办公室、架空自行车库等,总面积2万平方米左右。建筑总体平面呈工字形形式，长边长116.64米，短边长53.88米，建筑内部通过走道和廊桥形成了一个水平向度、连贯而高效的交通体系；八部楼梯均匀布置，满足垂直向度的人流疏散和交通的要求。

整个场地现状西北比阜埠河路低约2.25米，西南与阜埠河路基本持平，场地本身高差很小。建筑结合基地形状，将人流车流分开。西面广场与道路平接，通过踏步处理，把人流引入一层门厅。车流从建筑西南面的



Entrance Section 入口剖面图

校园道路进入，沿路边停靠；同时建筑在这个方位布置了架空层自行车库出入口，车库出入口距离基地开口较近，自行车进入基地后能迅速进入车库；这样机动车流与非机动车流对人流的干扰达到了最小。

设计逻辑

理论逻辑——群构

群构理论是探索如何以群体建筑为载体，使个体与群体有机整合的理论，其在多个方面表现出了对高校校区在新时代条件下出现的多种新特质的灵活适应性。新校区的规划设计以此理论为指导，以达到资源高效利用。群构形态适应了现代教育理念的要求，使各学科之间更易进行跨专业交流，同时建筑整合必然带来整个场地景观环境的整合，建筑景观相互交叠，形成多种的趣味空间。综合教学楼建筑设计遵循的是整个新校区的规划理念，形态上没有做过多复杂的变化，而是将自身作为群构网络体系的一个组成单元，保持某种相对完整性和标识性的同时，为整个组群的有机生长做好准备。

场地逻辑——“侧身”

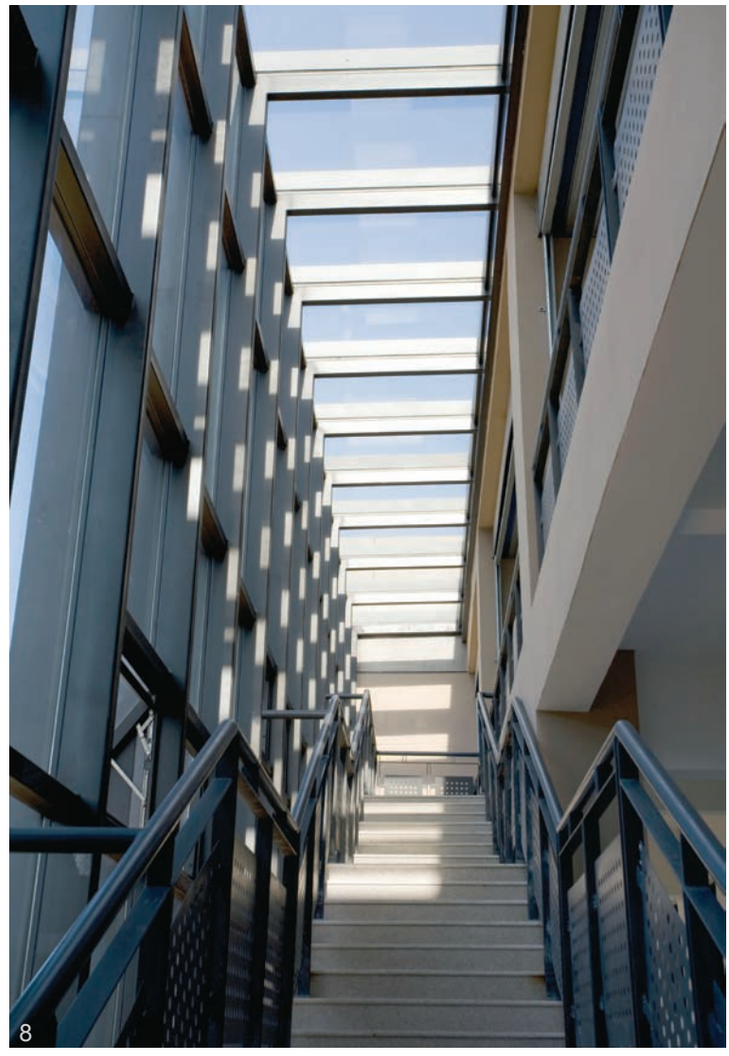
建筑近2万平方米的不小体量以何种姿态介入这块敏感的场地是设计思索的核心；而场地的相关限制要素或隐或显，梳理起来困难重重。如只囿于基地本身，会让人迷惑。当跳出这一界限，以城市的角度审视这一切时，便顿时豁然。山体——横亘基地东侧的山体成为解惑的关键之匙。它从不应只是建筑单体视觉资源，因而在确定建筑位置时必须非常审慎，建筑“侧身”避让，对天马山风景区山体的遮挡达到最小化，把山景这一公共资源还给了城市。此外，线性的建筑形体具有引导作用，将人的视线引向山体。山体的景观效能因建筑而增强；建筑以山为背景，形象则更为凸显。建筑和山体原本难以调和的矛盾关系消弭于无形，反倒呈现出一种共生的状态。

形体逻辑——线性穿插

群构理念与功能的严格要求使得线性的形体成为解决问题的最佳答案。空中俯瞰,形体异常简单，两个垂直于城市道路的方形体块构成建筑主体，入口的体块横贯主体，在北面“昂首挺出”,构成了主体间的“强连接”,以至于整体呈三合院的态势；靠近山体的建筑两部分之间的连桥形成“弱连接”,为山体观赏提供最佳视角。入口两翼突出，如张开翅膀对人流形成迎合之势，中间陷入部分层层退台，增加空间层次感，也减少了对城市空间的压迫。从城市道路看过去，几个维度的穿插搭接、碰撞、开槽和退让构成，使得建筑形态表现出多元化复杂化的表情。花坛、台阶、坡道等环境要素延续着建筑主体几何形态构成方法，错落有致，与背景山峦的起伏产生了一种奇妙的对应，同时形成了主体的基座，让建筑牢牢“嵌入”了大地。基座略显复杂的形式产生了一些暧昧的空间，这些空间没有限制，没有明确的功能，却因不经意间发生的故事给人以惊喜。

空间逻辑——渗透

建筑复合化的形态形成了性质各异的围合空间。入口广场是外向的、开敞的、动态的，结合踏步处理具有明显的引导性。建筑内部庭院是内向的、安静的、相对私密的；内院环境处理上没有进行任何绿化处理，而是采取了与建筑表皮相同的材质作为铺地，获得了一体化的界面关系。内院两侧的形体如同画框，将对面的山景框入画中，一如路易斯康德的萨克生物研究所的庭院，它有一个天与地的相交的界面，我们则攫取了一个广场与山体相交的的界面。入口处的新校园规划的大尺度广场与建筑前广场及组团间的广场相互融通，通过不同标高的变化来丰富外部环境，同时通过大的台阶、平台、连桥来实现内部、外部环境的立体化，使得地上与地下，室外空间与室内空间，情与景，人与物形成渗透，产生微妙联系。建筑各个立面上均采用减法，掏空形成空中花园,丰富了小环境，同时与天马山和整个校园环境相互呼应，融为一体。渗透不仅仅带来空间层次的变化，同时亦赋予建筑生态上的意义。我们利用架空层与露天庭院贯通内外，组织自然通风风道，散热的效果大大增强。同时受湘西传统民居的吊脚楼凉台及晒楼类型空间的启发，建筑利用边庭导入自然光线和通风，改善局部小气候微循环。相比昂贵的生态技术，这些朴素的做法更加契合当下中国社会现实,也是建筑师一直以来探索的地域建筑设计的途径之一。



材料逻辑——水刷石

建筑师面临两个现实问题——如何表达地域文化性、如何面对工程造价受限。湖南大学作为千年学府，文化底蕴深厚，但对老校区原有建筑的简单形态模拟或符号拼贴只能流于肤浅，不能体现校园的文化特质；由于造价受限，运用变异形态与新型材料来体现建筑的现代性亦不可取。最终，建筑师把建筑材料作为突破口，选择了校区老建筑的水刷石作为建筑外墙，让这种传统工艺重新焕发生机。水刷石对光具有漫反射和折射效果，在不同季节、天气和阳光角度下可呈现不同的色泽和感觉。在自身限定的区域中，设计从场地到建筑统一采用水刷石饰面，使建筑“折旧”并易于融入环境，完成一个共同的“场域”，体现了“场域”意识，让建筑“从土里生长出来”。同时，粗糙的水刷石覆满了表皮，给予了建筑某种原始的况味，局部嵌入了光洁至极限的透明玻璃，建筑的戏剧化由此产生——这种显得有些另类的表情定义出自身存在的意义，对抗着周边建筑的媚俗杂乱。表皮匀质排布着的竖向长条形方窗，严格控制1:4比例关系，窗洞有意识凹入很深，在光照下形成了长长的阴影，普通窗户化成一个个“洞穴”，大大增强了建筑的雕塑感。在均质的表皮中插入或伸出某些形体，局部产生一定变异，整体化中不失细节。建筑的“血液”中留存着老建筑的文化基因，具有鲜明的时代烙印的形体也彰显了建筑对该区域的统治力。

结语

设计的逻辑使得设计处于某种自律状态，这种自律表达了建筑师一直以来对场所、空间、材料等的思考，它保证了建筑的品质，且不时带来意外的感动。人们经过教学楼时常看到这样惬意悠然的生活化图景：灿烂阳光下，人们在花池旁、台阶上、屋顶花园里或站、或坐、或躺、或读书、或交谈、或远眺；这一切超出了原初的构想，却是我们和大家所乐见的。

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[1] 宋明星．“群构”：整体化高校校园环境构成方法研究[D]．湖南大学，2004.

[2]魏春雨．湖南大学法学院、建筑学院建筑群[J]．城市・环境・设计，2010（06）：168

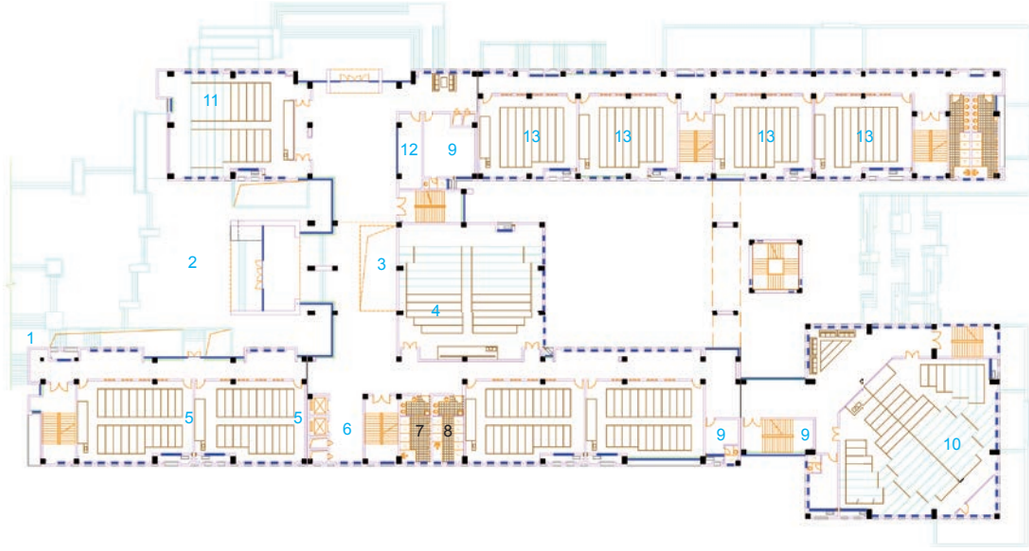
7. Entrance ramp
8. Staircase in the garden on air

7. 入口坡道透视

8. 空中庭院楼梯透视

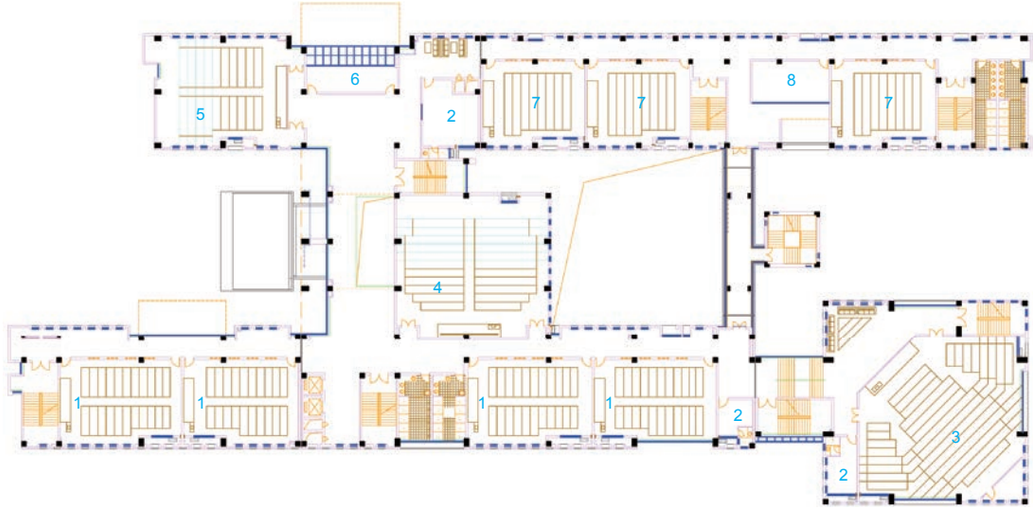
Ground Floor Plan:
1. Passageway
2. Teaching Building entrance
3. Lobby
4. Lecture hall (capacity: 240)
5. Classroom (capacity: 100)
6. Lift lobby
7. Male toilet
8. Female toilet
9. Teachers' lounge
10. Lecture hall (capacity: 300)
11. Lecture hall (capacity: 160)
12. Reception
13. Classroom (capacity: 80)

一层平面图:
1. 行人通道
2. 教学楼入口
3. 门厅
4. 240人阶梯教室
5. 100人教室
6. 电梯厅
7. 男卫生间
8. 女卫生间
9. 教员休息室
10. 300人阶梯教室
11. 160人阶梯教室
12. 传达室
13. 80人教室



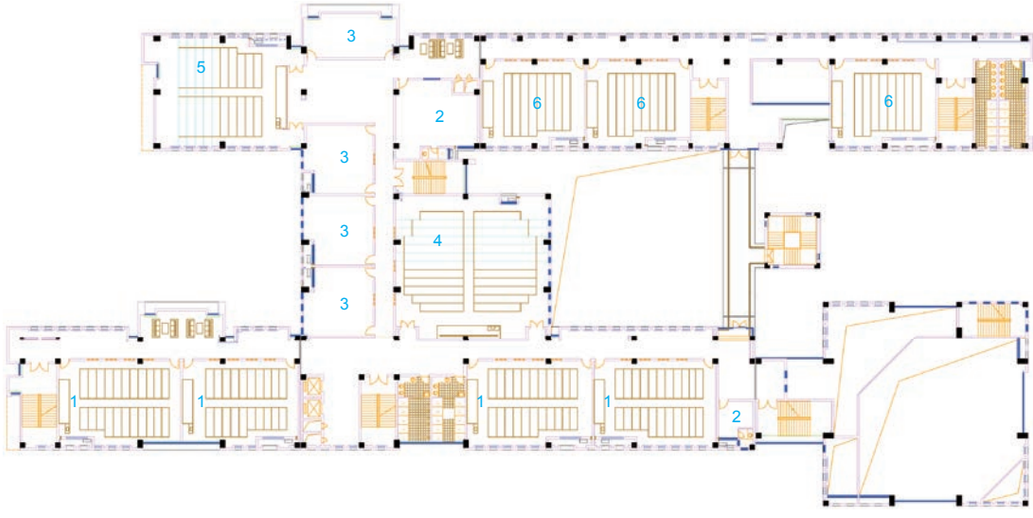
First Floor Plan:
1. Classroom (capacity: 100)
2. Teachers' lounge
3. Lecture hall (capacity: 300)
4. Lecture hall (capacity: 240)
5. Lecture hall (capacity: 160)
6. Office
7. Classroom (capacity: 80)
8. Individual study room

二层平面图:
1. 100人教室
2.教员休息室
3.300人阶梯教室
4.240人阶梯教室
5.160人阶梯教室
6.办公室
7.80人教室
8.自习室



Second Floor Plan:
1. Classroom (capacity: 100)
2. Office
3. Lecture hall (capacity: 240)
4. Lecture hall (capacity: 160)
5. Classroom (capacity: 80)
6. Individual study room

三层平面图:
1. 100人教室
2. 教员休息室
3. 办公室
4. 240人阶梯教室
5. 160人阶梯教室
6. 80人教室



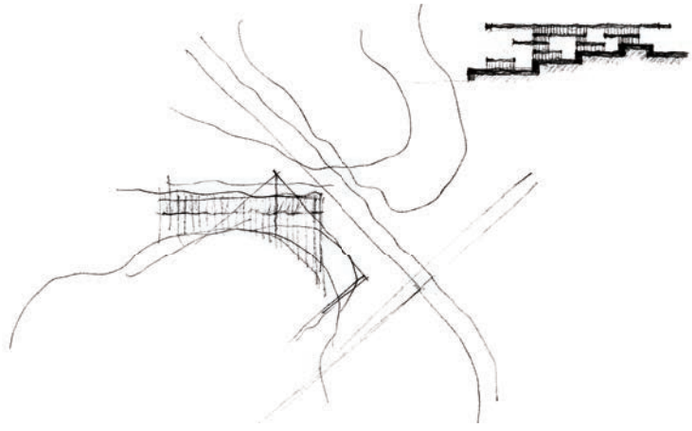
LIBRARY IN SICHUAN FINE ART INSTITUTE, HUXI CAMPUS Chongqing
TANG Hua / Tang Hua Architectural Design Co., Ltd., Shenzhen

四川美术学院虎溪校区图书馆

重庆

汤桦 / 深圳汤桦建筑设计事务所有限公司

Gross Floor Area: 14,259.44m²
Design/Completion Time: 2006/2008
Architect: TANG Hua / Tang Hua Architectural Design Co., Ltd., Shenzhen
Technical Design: SU Weidong / Chongqing Architectural Design Institute
Structure: Reinforced Concrete Frame
Photographer: TANG Hua, XU Lang, Fu Xing Architectural Photography
建筑面积：14,259.44平方米
设计/建成时间：2006年/2008年
建筑设计：汤桦 / 深圳汤桦建筑设计事务所有限公司
技术设计：苏卫东 / 重庆市设计院
建筑结构：钢筋混凝土框架结构
摄影师：汤桦，徐浪，傅兴建筑摄影工作室



The Library in Sichuan Fine Art Institute, Huxi Campus is located at the central area between teaching sector and living sector. The site is an east-west stretching terrace, with a maximum height difference of six metres and hills no more than twenty metres high on the north and south side. The east of the site is connected to the thoroughfare in the campus. The brief of the Library is to have the capacity of 1,200 seats and one million books.

The Library is positioned with a north-south direction, vertical to the contour of the terrace. The slice volume contributes to good performance in natural lighting and ventilation, and also provides a continuous view of landscape for the interior.

Sichuan Fine Art Institute is firmly based on the local culture, which greatly influenced artists of different generations here who have been keen on exploring local traditions. The design of the Library is no exception. The configuration of the architecture is inspired by commonly seen buildings in Chongqing in the east of Sichuan Province, such as brickkilns and warehouses. The building stands out in the hilly area with a simple and integrated form, being in sharp contrast with the existing small and scattered buildings in the campus. The meaningful relationship between such an architectural form with a "local complex" and the intentionally preserved and designed agricultural landscape is obvious. The concise shape maximised the use of the interior space, which is similar to the layout of traditional architecture.

Materials are selected according to the building structure and, more importantly, to local history. The façades of the main building are constructed with blue clay bricks, which continue from the roof to the ground of the plaza. The interior walls, beams and columns are pure concrete without any decoration, being harmonious with the façades in terms of colour and texture, yet not monotonous. Timber is utilised both in the façades and interior staircases. For the gable walls and the "sky garden", glass is extensively used, making interior activities in the Library clearly visible from outside. The façade materials are dense, solid and imposing, while the interior is soft, fine and friendly.

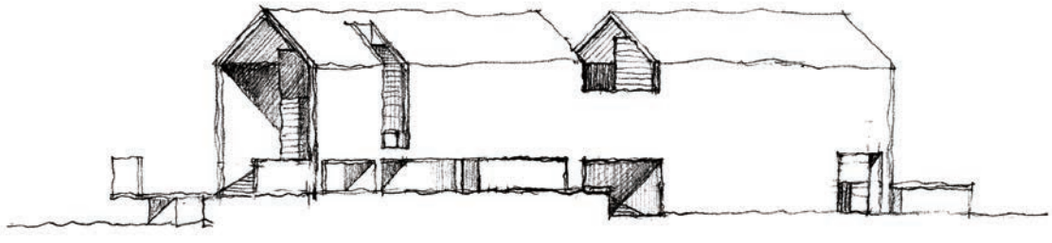
2

四川美术学院虎溪校区图书馆位于校园中心区，地处教学组团和生活组团之间。用地东侧与校园主干道接驳。现状为东西向延展的梯田，最大高差约6米，其南北为相对高度不超过20米的小山。计划安排1200个阅览座位，容纳100万册图书。

图书馆垂直于梯田等高线，沿正南北方向布置，较薄的条形体量有利于自然采光和通风，并在室内形成长卷式的景观画面。

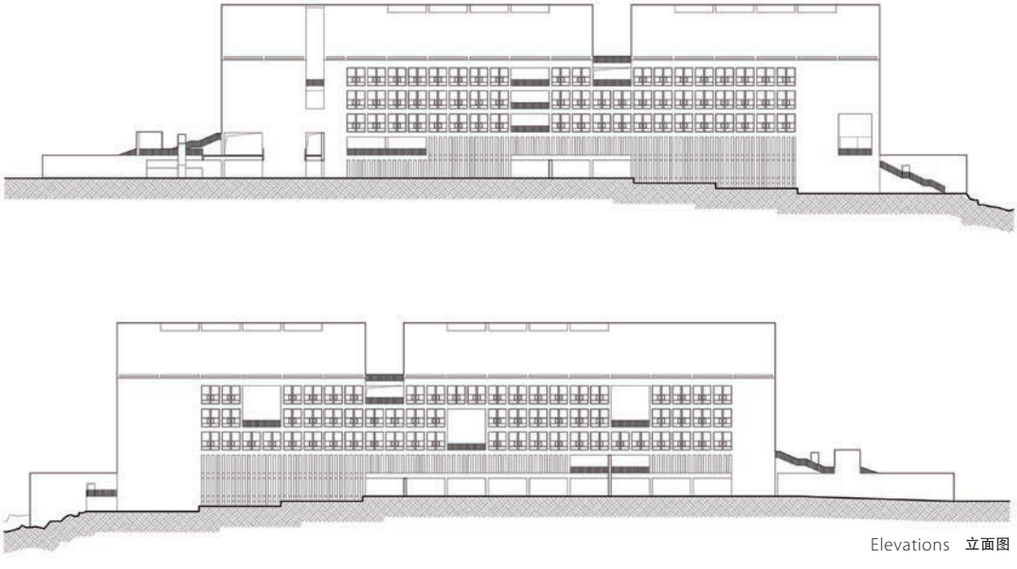
四川美术学院有着浓厚的乡土情结，对地域传统的独特关注一直影响着几代美术家的性格成长。图书馆的设计便立足于这种乡土性，取材于川东重庆地方随处可见的建筑原型，比如砖窑、仓库等——以一种简洁、整体的形式屹立于山地中，与校园已形成的小体量分散布局的建筑物形成对比。具有地域精神的建筑形式与刻意保留和设计的农业景观形成有意味的微妙关系；简明的体型在创造最大化的空间通用性的同时，也暗合了传统建筑空间的构成方式。

材料的选择除了依据其构造逻辑外，更重要的是考虑到历史逻辑。建筑主体的外表皮采用青色粘土砖叠砌，由屋面到墙身并一直延伸到广场地面。内部墙体及梁柱则采用清水混凝土，与外表青砖在色彩、质感上统一且具有变化。在外墙和内部楼梯间上均使用了木材。建筑山墙面和空中花园四周则大量使用玻璃，以使图书馆内部活动能够清晰展示出来。建筑外表的材料是高密度、坚硬、凝重的，而内部材料则倾向于细腻、亲和、轻盈。



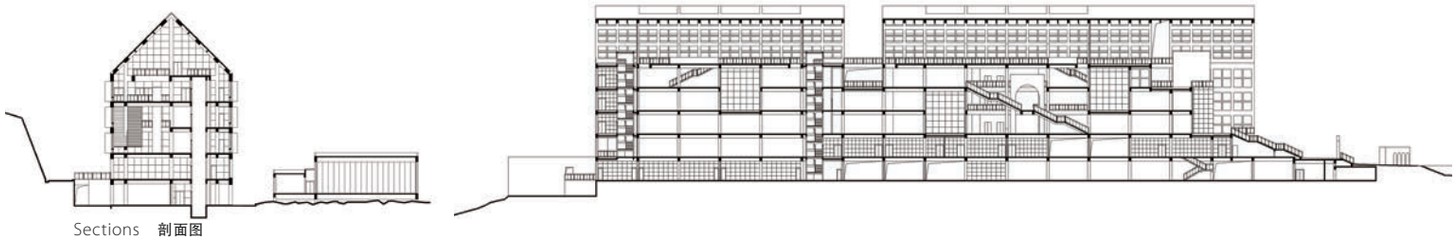
1. A strip volume
2. The surroundings
3. North façade

1. 建筑物为条形体量
2. 建筑周边的环境
3. 建筑的北立面



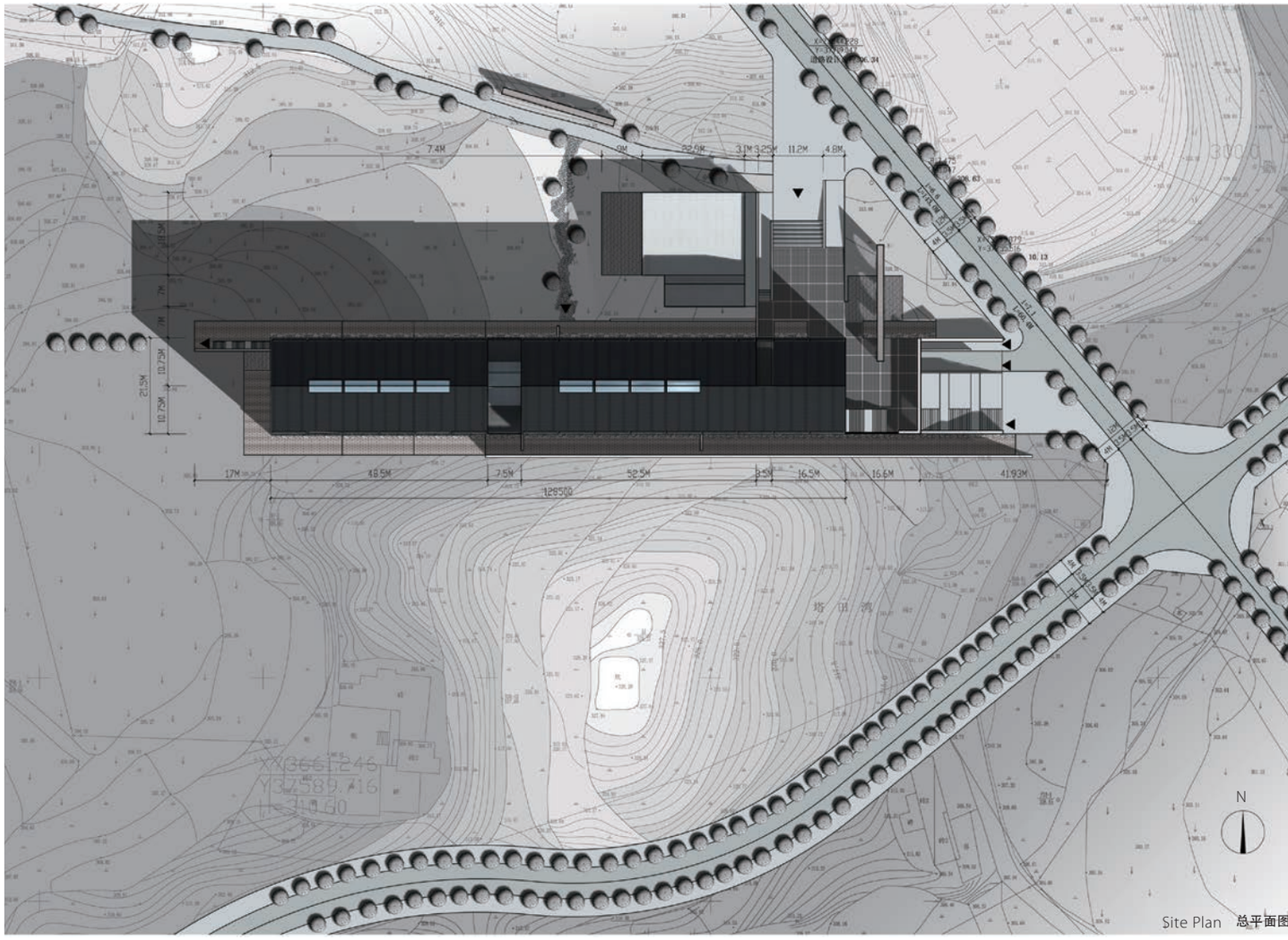
Elevations 立面图

4. West façade
5. Main path
4. 建筑的西立面
5. 建筑主路口

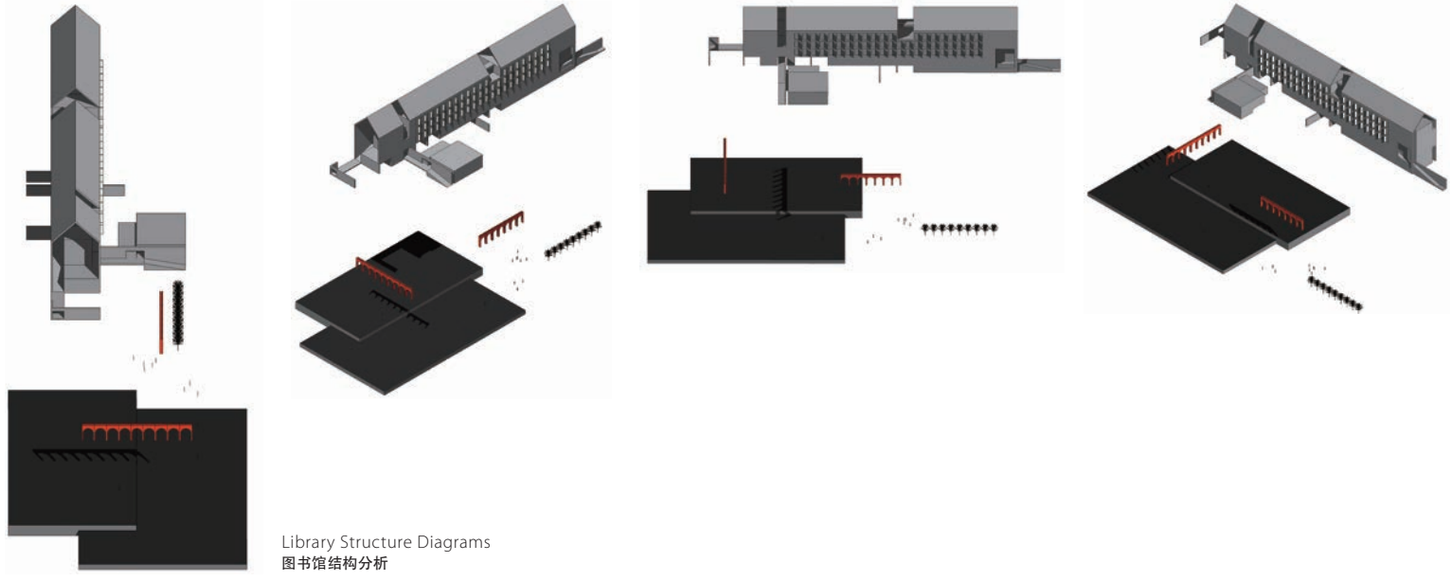


Sections **剖面图**

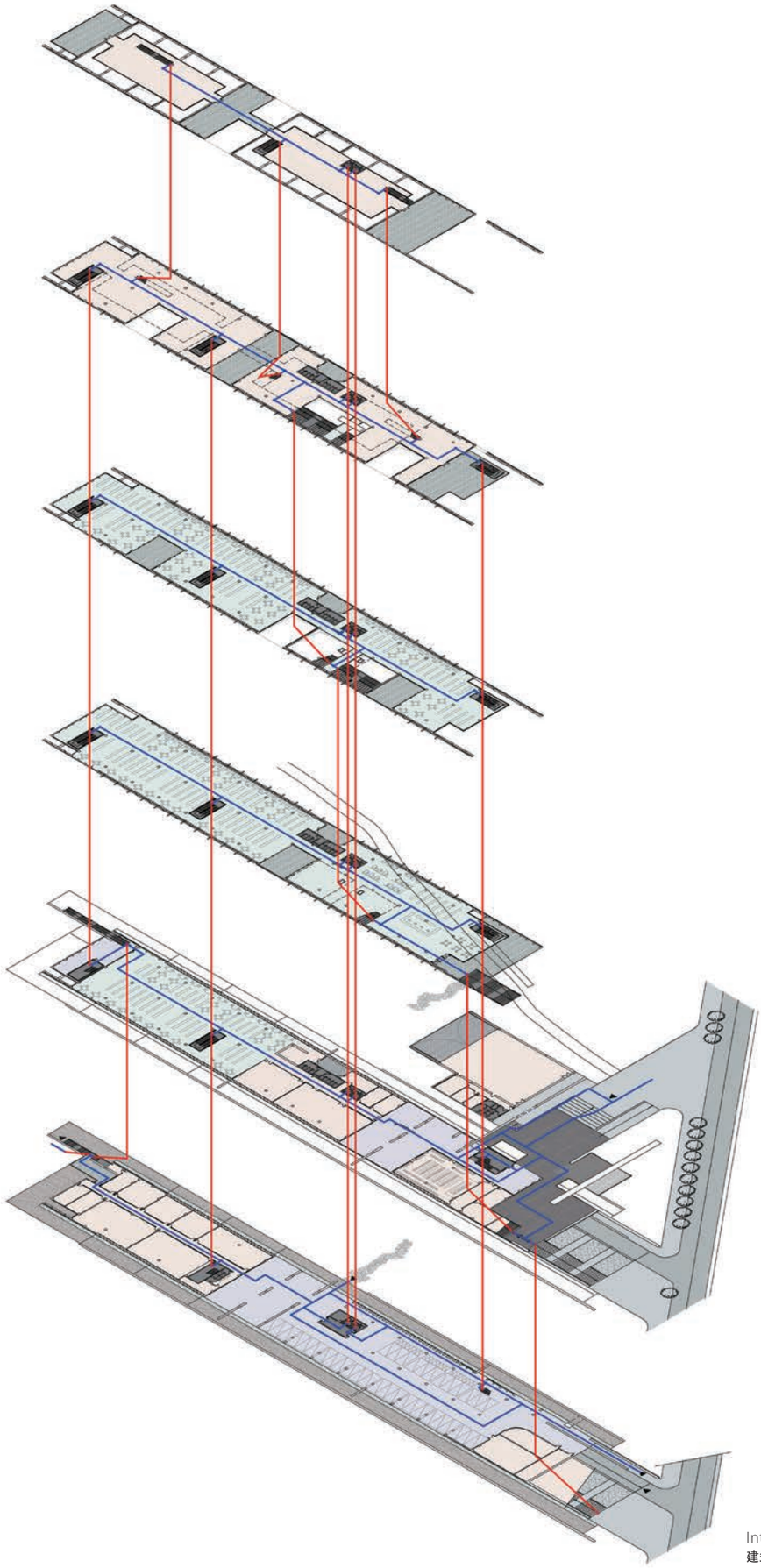
6-8. Main façades with cyan clay bricks
6-8. 建筑主体的外表使用了青色粘土砖



Site Plan 总平面图



Library Structure Diagrams
图书馆结构分析



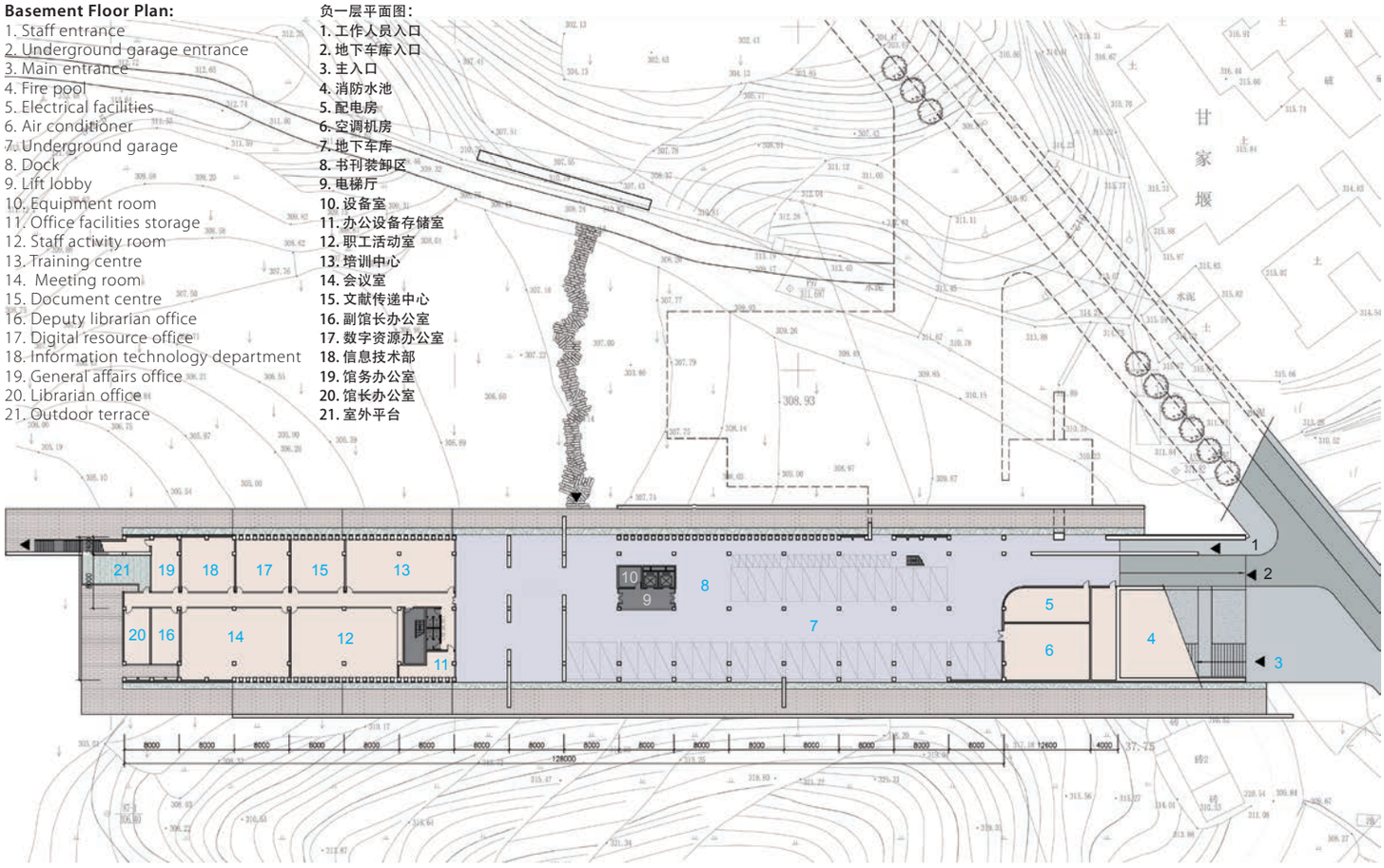
Interior Circulation
建筑内部交通流线图

Basement Floor Plan:

1. Staff entrance
2. Underground garage entrance
3. Main entrance
4. Fire pool
5. Electrical facilities
6. Air conditioner
7. Underground garage
8. Dock
9. Lift lobby
10. Equipment room
11. Office facilities storage
12. Staff activity room
13. Training centre
14. Meeting room
15. Document centre
16. Deputy librarian office
17. Digital resource office
18. Information technology department
19. General affairs office
20. Librarian office
21. Outdoor terrace

负一层平面图：

1. 工作人员入口
2. 地下车库入口
3. 主入口
4. 消防水池
5. 配电房
6. 空调机房
7. 地下车库
8. 书刊装卸区
9. 电梯厅
10. 设备室
11. 办公设备存储室
12. 职工活动室
13. 培训中心
14. 会议室
15. 文献传递中心
16. 副馆长办公室
17. 数字资源办公室
18. 信息技术部
19. 馆务办公室
20. 馆长办公室
21. 室外平台

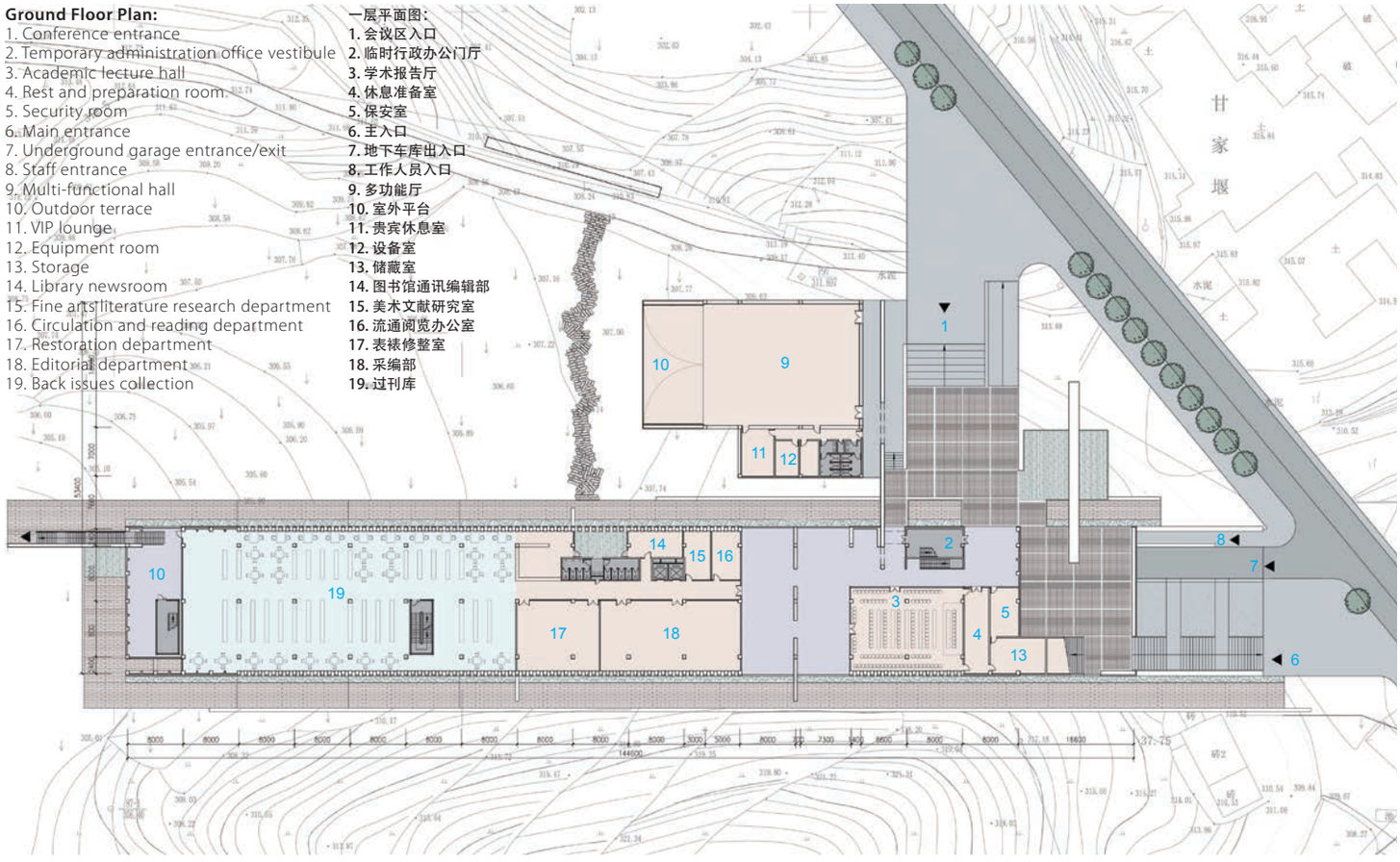


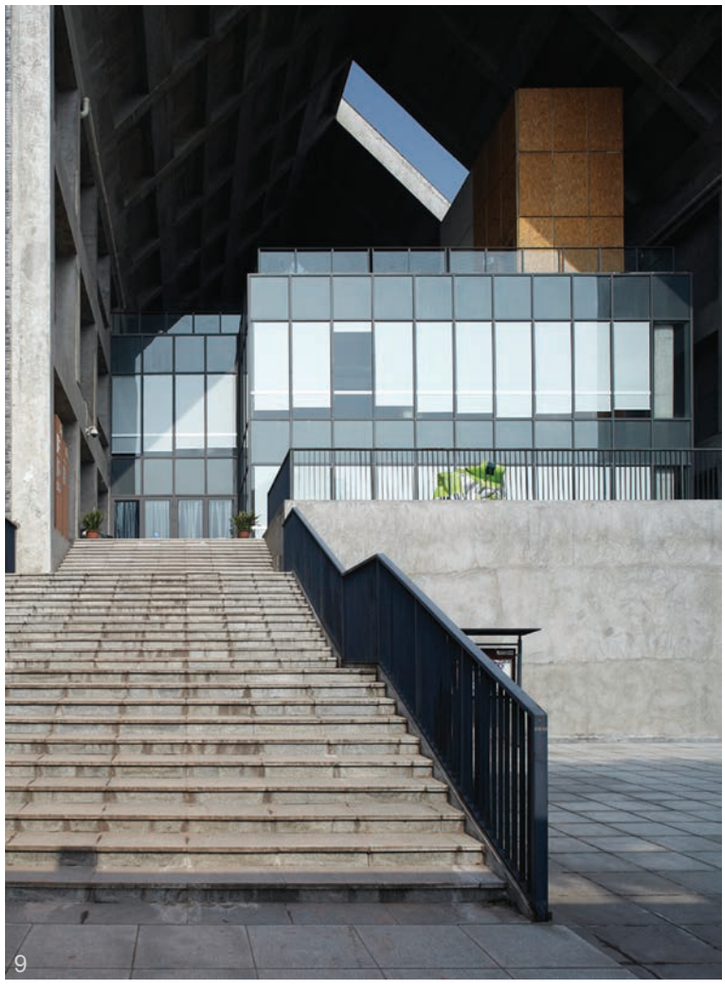
Ground Floor Plan:

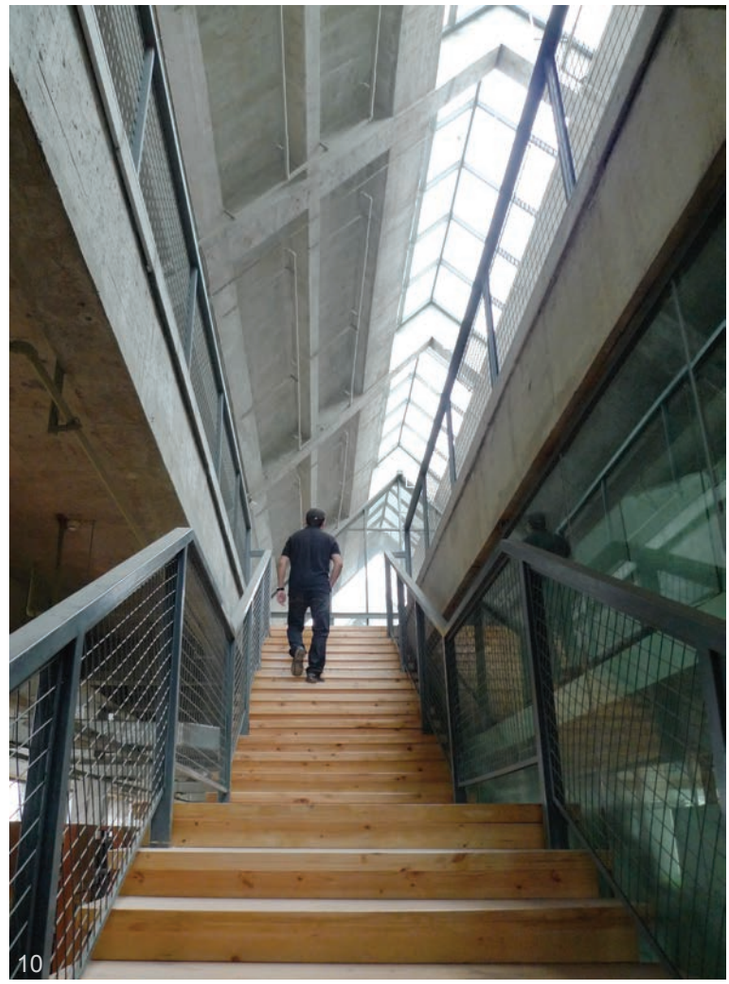
1. Conference entrance
2. Temporary administration office vestibule
3. Academic lecture hall
4. Rest and preparation room
5. Security room
6. Main entrance
7. Underground garage entrance/exit
8. Staff entrance
9. Multi-functional hall
10. Outdoor terrace
11. VIP lounge
12. Equipment room
13. Storage
14. Library newsroom
15. Fine arts literature research department
16. Circulation and reading department
17. Restoration department
18. Editorial department
19. Back issues collection

一层平面图：

1. 会议区入口
2. 临时行政办公门厅
3. 学术报告厅
4. 休息准备室
5. 保安室
6. 主入口
7. 地下车库出入口
8. 工作人员入口
9. 多功能厅
10. 室外平台
11. 贵宾休息室
12. 设备室
13. 储藏室
14. 图书馆通讯编辑部
15. 美术文献研究室
16. 流通阅览办公室
17. 表裱修整室
18. 采编部
19. 过刊库

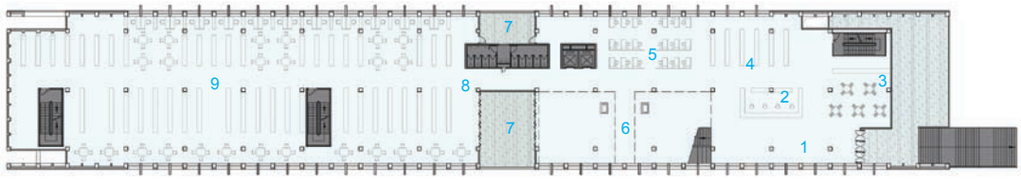






9. Building entrance
10. Stairs leading to top floor
11. The landscape of atrium
12. Interior walls, beams and columns with exposed concrete
13. Top floor skylight for natural lighting
14. Reading room on the top floor

9. 建筑的入口
10. 通往顶层的阶梯
11. 中庭的全景
12. 内部墙体和梁柱采用了清水混凝土
13. 顶楼天窗利于自然采光
14. 位于顶楼的阅览室

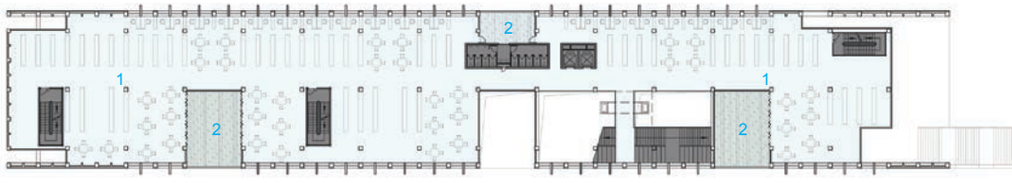


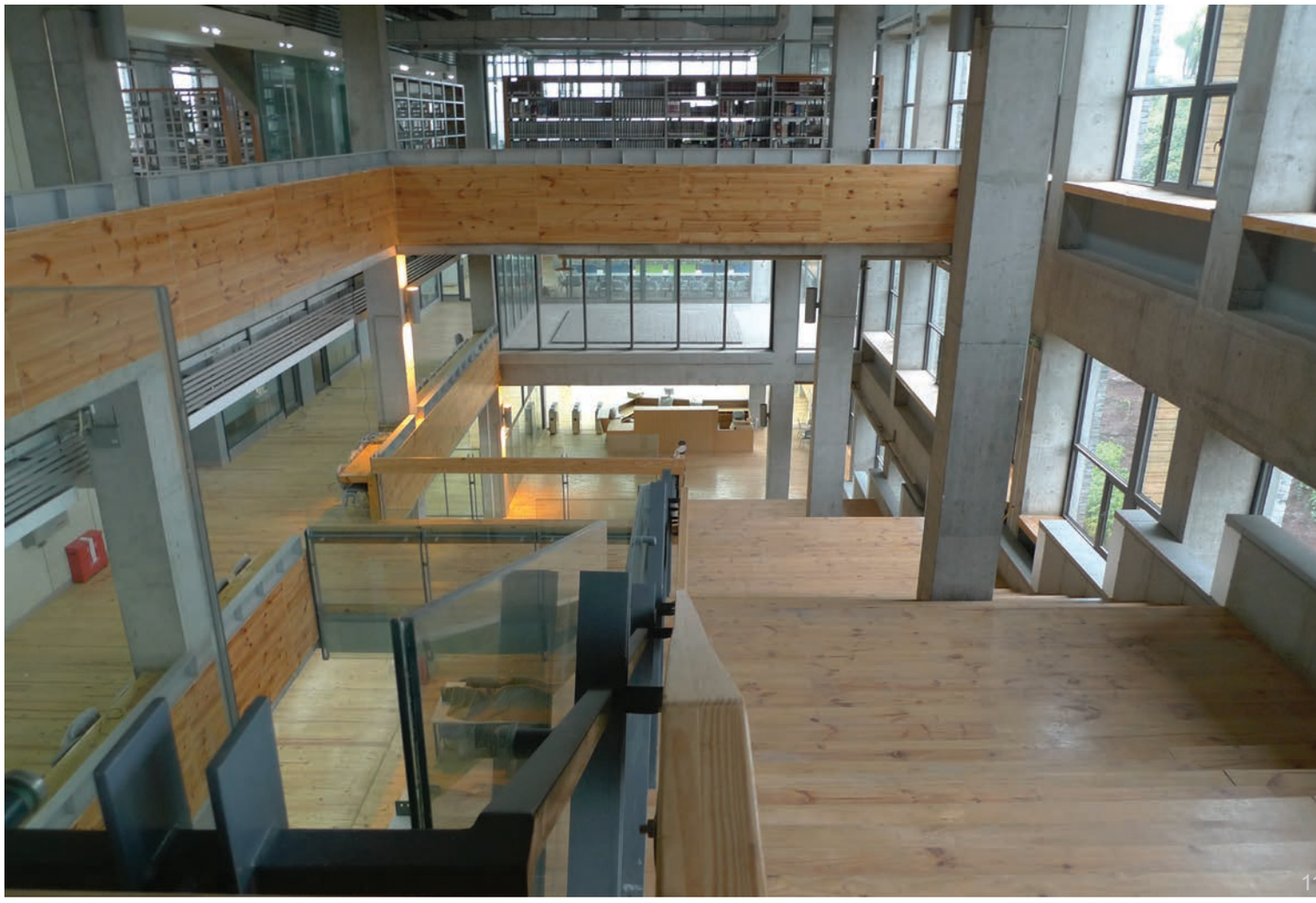
First Floor Plan (Above):
1. Lobby
2. Information desk
3. Water Bar
4. Bookshop
5. E-book reading room
6. Exhibition room
7. Garden
8. Non-book reading room
9. Current issues reading room

二层平面图（上图）：
1. 门厅
2. 服务台
3. 水吧
4. 书店
5. 电子阅览室
6. 展示
7. 花园
8. 非图书资料阅览室
9. 现刊现报阅览室

Second Floor Plan (Below):
1. Non-artistic books collection
2. Garden

三层平面图（下图）：
1. 非艺术类书库
2. 花园





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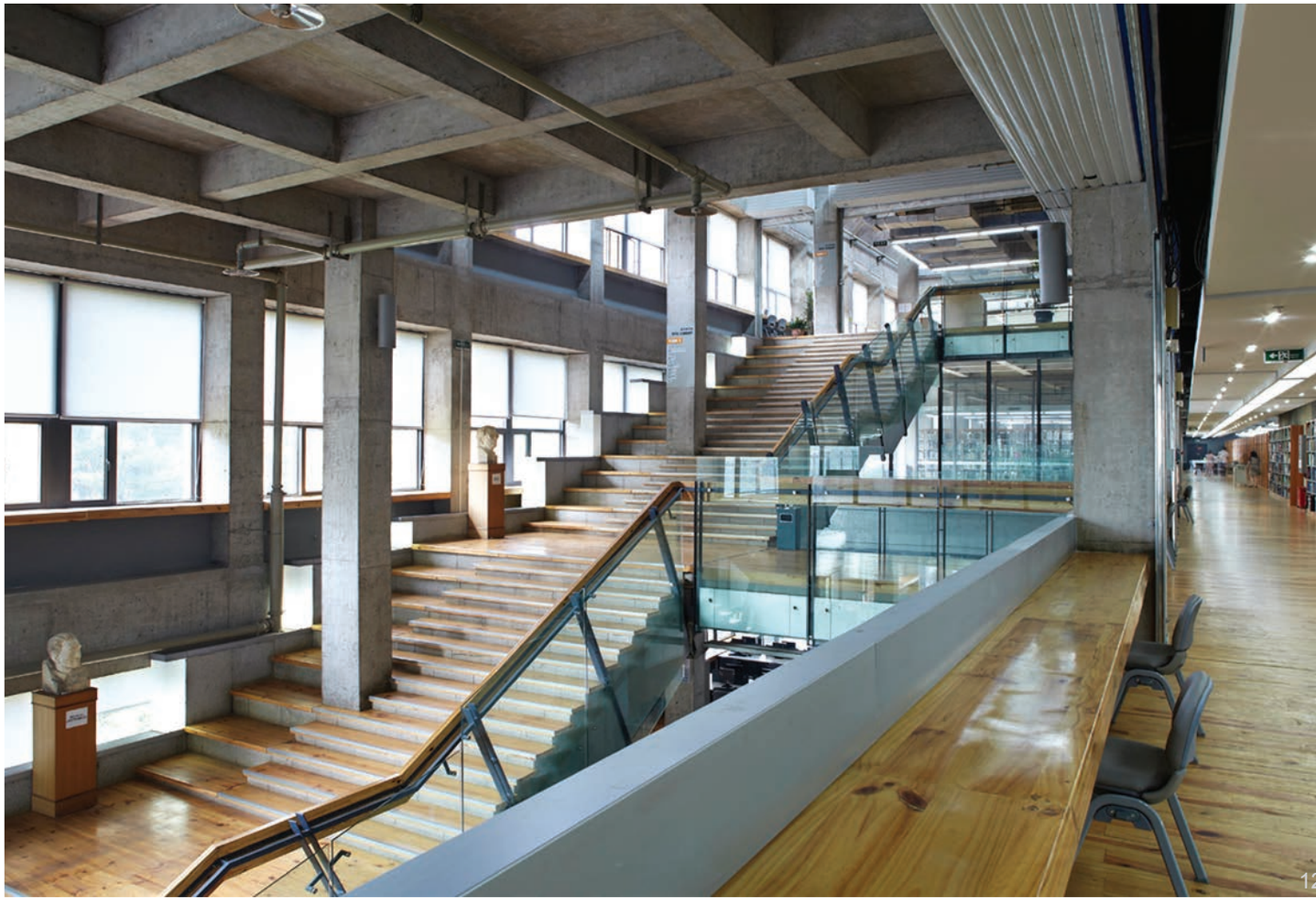


12

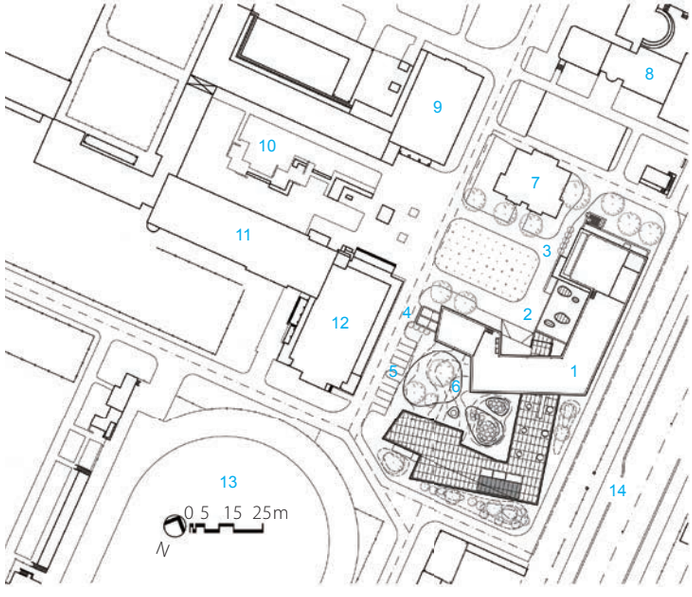
Third Floor Plan (Above) and Mezzanine Floor Plan (Below):
1. Temporary office
2. Garden
四层平面图（上图）和夹层平面图（下图）：
1. 临时办公室
2. 花园


Pro/ENGINEER
VISAY

SINO-FRENCH CENTRE AT TONGJI UNIVERSITY
Shanghai
ZHOU Wei, ZHANG Bin / Atelier Z+

同济大学中法中心
上海 同济大学本部校区
周 蔚，张 斌 / Z+建筑工作室

Site Area: 9,204m²
Building Area: 3,142m²
Gross Floor Area: 13,575m²
Design/Completion Time: 2004-2006/2006
Architect: ZHOU Wei, ZHANG Bin / Atelier Z+
Design Team: ZHUANG Sheng, LU Jun, WANG Jiaqi, XIE Jing
Contractor: Hua Sheng Construction (Group) Co., Ltd., Zhejiang
Photographer: ZHANG Siye
Client: Tongji University
Structure: Reinforced Concrete Frame, Partly Steel Frame;
Storeys: 1 Basement, 5 Storeys above Ground and 1-Storey Penthouse
Main Materials: COR-TEN Steel Sheet Panel, Precoated Cement Panel, Exposed Concrete, Steel Profile, Aluminium, Glass, Timber
基地面积：9204平方米
占地面积：3142平方米
建筑面积：13575平方米
设计/建成时间：2004-2006/2006年
建筑设计：周蔚，张斌 / Z+建筑工作室
设计团队：庄昇，陆均，王佳绮，谢菁
施工团队：浙江华升建设集团有限公司
摄影师：张嗣烨
业主：同济大学
结构形式：钢筋混凝土框架，部分钢结构
建筑层数：地下1层、地上5层、机房1层
主要材料：耐候钢板、无机预涂装水泥纤维板、清水混凝土、型钢、铝材、平板玻璃和木材



Sino-French Centre at Tongji University is located at the southeast corner of the campus, with The December 9th Movement Building, the oldest existing building of the campus, and The December 9th Movement Memorial Park on its west side, tracking field on its south side, and Siping Road on its east side. XuRi Building, which should be preserved, is located at the northwest corner of the site. Another precondition is that an existing forest of metasequoia and another nine trees scattered such as deodar cedars, planetrees, Japanese pagodatrees and willows should be retained.

Site Plan (Left):
1. Sino-French Centre, Tongji University
2. Main entrance
3. Secondary entrance
4. Garage entrance
5. Parking
6. Garden
7. Pavilion Xuri
8. Building of Science
9. Badminton court
10. The December 9th Movement Memorial Park
11. The December 9th Movement Memorial classroom
12. The December 9th Movement Memorial Salle
13. Sports field
14. Siping Road

总平面图（左图）：
1. 同济大学中法中心
2. 主入口
3. 次入口
4. 地下车库入口
5. 机动车停车位
6. 庭院
7. 旭日楼
8. 逸夫楼
9. 羽毛球馆
10. 一二·九革命烈士纪念园
11. 一二·九教室
12. 一二·九礼堂
13. 体育场
14. 四平路

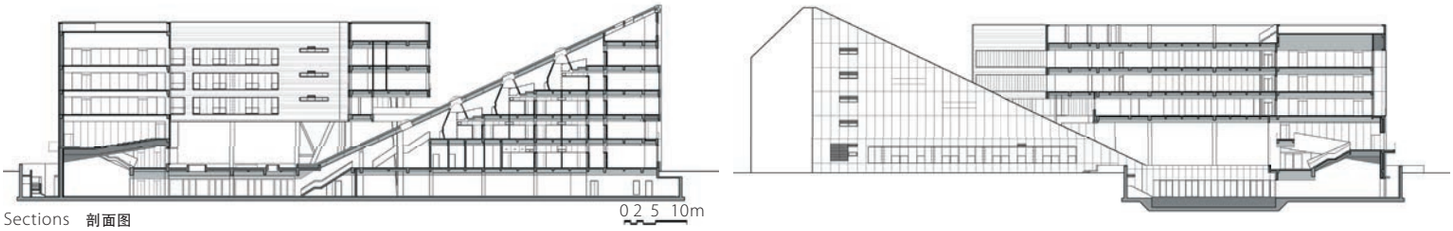
2

The goal of the project is to create a form system to integrate its programme, its site context and its culture context. The architects' way to achieve it is to use a geometric diagram to control the materialisation of its programme and circulation, to conform to the site restriction, and also to indicate its symbolic meaning, the culture exchange between the two countries. The diagram of "Hand in Hand" is introduced to organise the whole building with its inherent structure of dualistic juxtaposition.

The programme is composed of three parts: college, office and public gathering space. Two similar yet different zigzag volumes, occupied by college and office sector respectively, overlap and interlace each other, and then they are linked together by the volume of public gathering space on underground and upper level. College and office sector share the main entrance which is located at the void of the intersection of these two volumes, while public gathering space has its own lobby, which faces to roof pool and sunken garden, to connect underground exhibition hall

1. Crossing bridge
2. Overview from southwest
3. Southwest view

1. 天桥
2. 西南侧外观
3. 西南侧局部



Sections **剖面图**

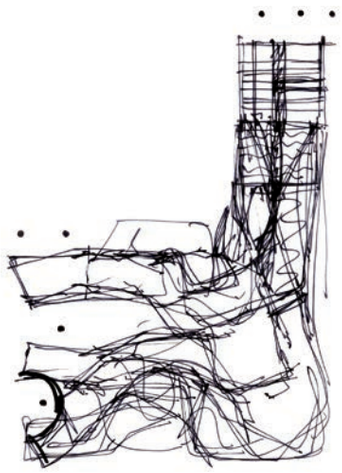
3

and lecture hall on the upper level. The function of the college and offices is well kept in mind by using regular shapes for almost each unit. Yet applying zigzag corridors to connect these units creates abundant interests throughout inside and outside spaces. In the meanwhile, existing trees are incorporated into the design to add more charms to this complex.

Different materials and structures are applies to the different components of the complex. College sector is wrapped by COR-TEN steel sheet panels. The unique texture and colour of the panels and the smoothness of the glass create delicate variation. Pre-coated cement panel is introduced into the office sector. Regular and irregular window bands provide sunlight to the office unites and corridors. Public gathering space is created by the combination of both COR-TEN steel panel and pre-coated cement panel. The vivid colour and texture of COR-TEN steel panel is contracted with plain grey cement panel. This treatment indicates the symbolic meaning of this project, the juxtaposition of two different cultures.

Landscape design plays a very important role in this project. The retained existing metasequoias, surrounded by office sector, public gathering area and XuRi Building form an entry plaza of the complex. Connected with The December 9th Movement Memorial Park, this space will become a very important outdoor space to serve the entire campus. The connection between the two parts of the building formed a roof pool and a sunken garden, which becomes intermedium between urban space and campus space. A semi-private garden, created by college and office sector, gives a peaceful place for learninging and relaxing. Eventually, by applying different geometries, materials, colours and structures, the architects created a unique architectural piece that has the profound meaning of cultural exchange between China and France.

4. View from west
5. View from north
4. **西侧局部**
5. **北侧局部**



Sketch **草图**

Idea: Hand in Hand – A Structure of Dualistic Juxtaposition **设计理念：双手相握 差异并置**

6. Main entrance
6. 办公、教学单元共用门厅

同济大学中法中心位于校园东南角，西临校园内最古老的建筑物一二·九大楼和一二·九纪念园，南侧为运动场，东侧紧靠四平路。基地西北角为保留的旭日楼，其南侧正对西面一二·九纪念园有一片水杉林，基地内另有9棵散落的雪松、梧桐、槐树、柳树等需要保留。

设计师把该建筑看作建筑形式系统对内部使用功能和外部环境条件以及更广阔的文化语境的创造性整合。设计师从项目本身所具有的多层面的“交流性”入手，提出一个“双手相握”的图解，利用该图解的潜在“二元并置”结构来组织整个建筑的相关系统，以达成一个“和而不同”的整体。这个图解既是对建筑内部功能和流线系统的抽象，又源于场地条件对建筑体量的挤压和拉伸，也体现了对中法两国文化的差异并存的关照。

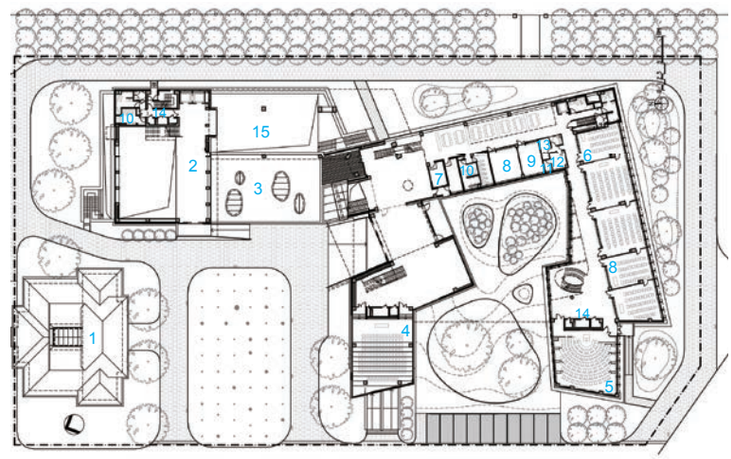
整个建筑分为既分又合的三个部分，分别用于教学、办公和公共交流。南北两条进深相同、由曲折连廊串联大小使用空间的教学、办公单元互相穿插后分别从空中和地下结合到最北端的公共交流单元。不规则的体量转折和穿插既最大限度地使9棵大树和水杉林得以保留，又创造了丰富多变的室内外空间，使巨大的体量消解于细腻的环境中，同时绝大部分使用空间仍保持规则形状。教学、办公单元的共用门厅位于二者上下穿插的虚空部分，通透高耸，强化了两者的穿插关系。公共交流单元另设一个独用门厅，并将地下展厅、南侧屋顶水池、下沉庭院和二层报告厅联系起来。

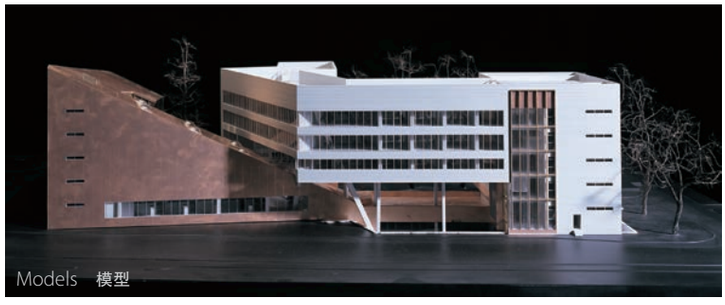
三个不同单元采用不同的材质组合、色彩和构造做法来建构。教学单元用自然氧化的耐候钢板包裹网格状立面，均质的网格中开孔和玻璃微妙地变化；办公单元用轻质混凝土挂板覆盖立面，规则条窗和不规则条窗分别为办公室和走廊提供光线；公共交流单元是轻质混凝土挂板和耐候钢板的混合立面，外表皮为轻质混凝土挂板，大尺度开口部位为耐候钢板。这样的两种色彩和材质暗示了中法不同的文化传承的视觉表征。

相互耦合的空间体量与环境的互动形成了丰富多变的外部景观。保留的水杉林被办公单元、公共交流单元及旭日楼围合后成为建筑的入口庭园，并与一二·九纪念园一起，形成校园中一个重要的公共开放空间。建筑两个单元穿插处的屋顶水池和下沉庭院既丰富了景观层次，又使建筑本身成为纪念园空间和四平路城市空间的中介。南北单元在基地南部围合出另一个相对内向私密的绿化庭院，为师生提供了安静的交流场所。这一庭院由透明的门厅与北侧水杉林园建立了视觉联系。设计师通过运用各种几何形态、材料、色彩和构造，成功打造了一个象征着中法两国之间文化交流的建筑范例。

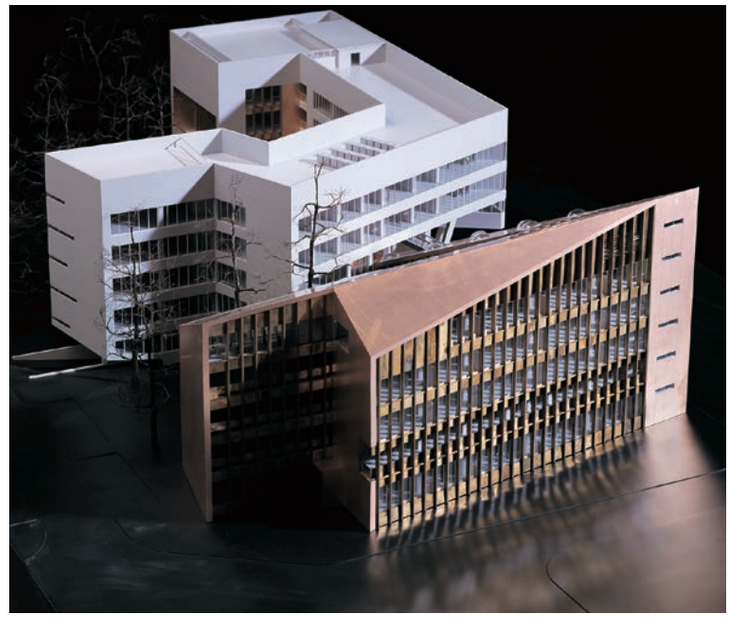
Ground Floor Plan (Below):
1. Pavilion XuRi
2. Entrance hall
3. Pool
4. Theatre with a seating capacity of 140
5. Amphitheatre with a seating capacity of 70
6. Classroom
7. Guard
8. Admissions office
9. Training Department
10. Male/female/handicapped toilet
11. Storage
12. Photocopy
13. Service
14. Electric room
15. Void

一层平面图（下图）：
1. 旭日楼
2. 门厅
3. 水池
4. 140人阶梯教室
5. 70人阶梯教室
6. 教室
7. 门卫
8. 市场招生部
9. 培训部
10. 男、女厕/残障厕
11. 储藏室
12. 复印间
13. 茶水间
14. 强、弱电
15. 上空

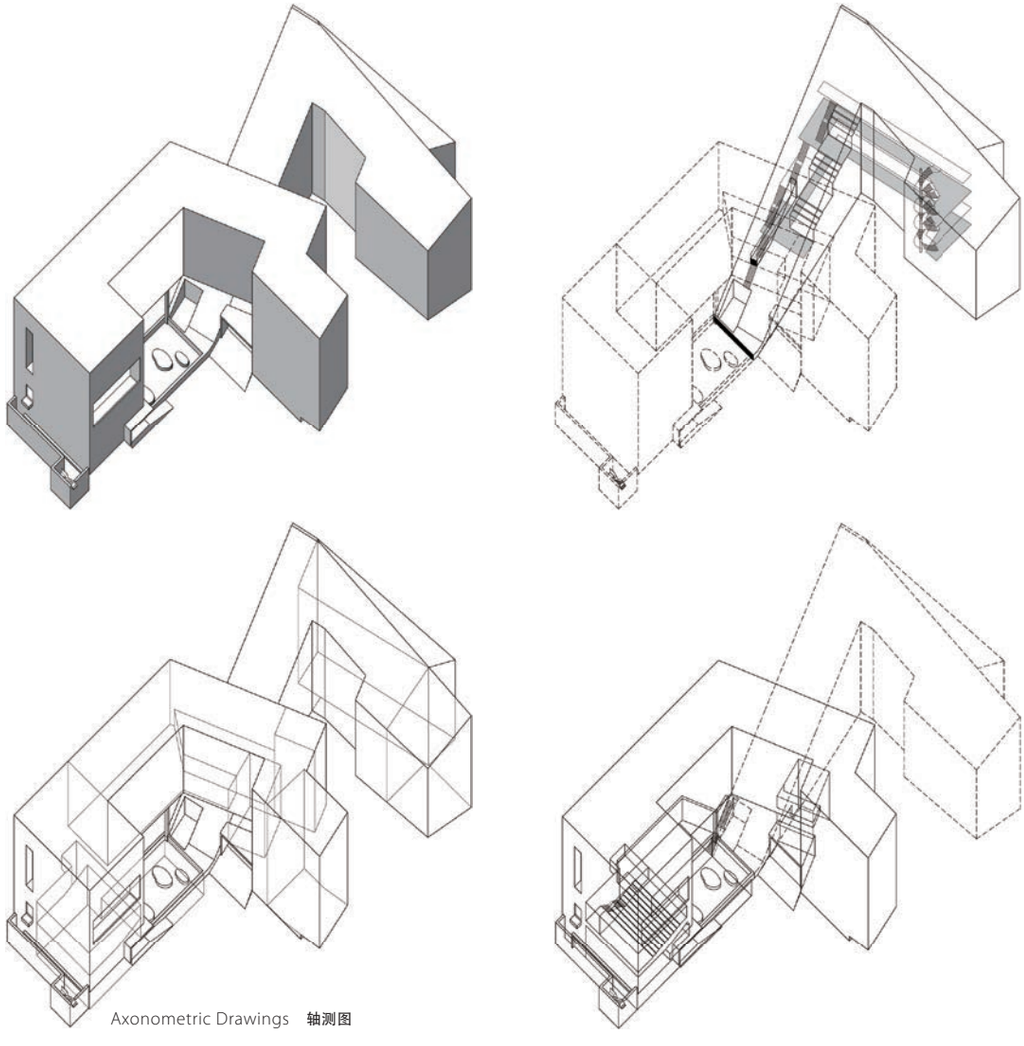




Models 模型

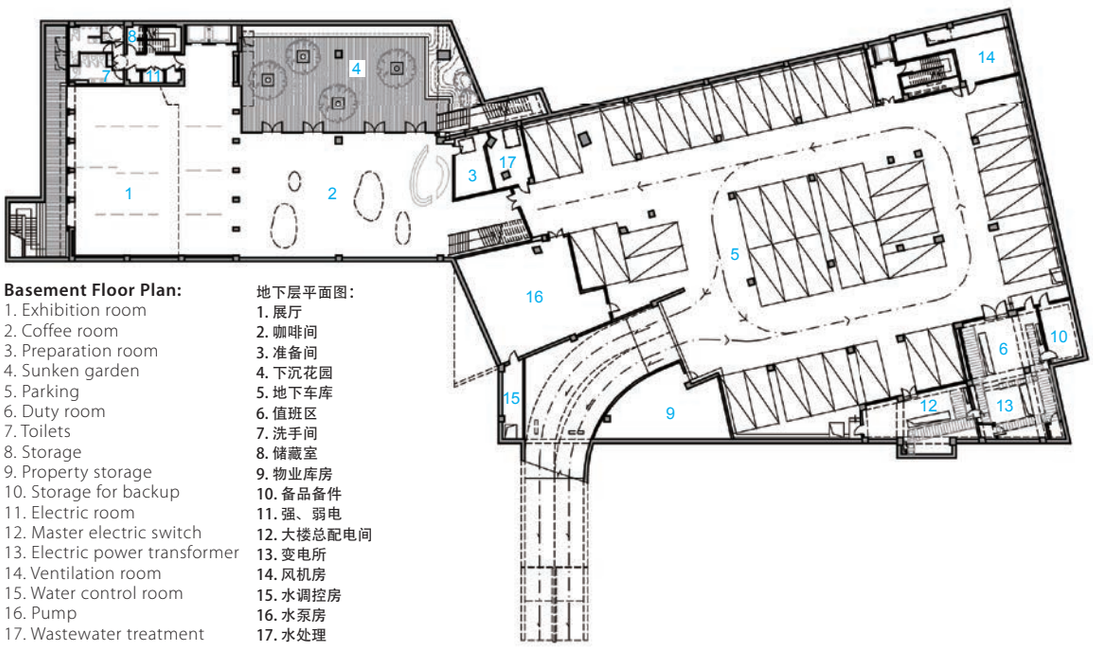


7. Sunken garden
7. 下沉庭院



Axonometric Drawings 轴测图

8. Spiral staircase in College Sector
9. Interior of public gathering space
10. Lecture hall
11. Terrace of College Sector
12, 13. Interior of Office Sector
14. Interior of College Sector
8. 教学单元里的旋转楼梯
9. 公共交流单元室内局部
10. 报告厅
11. 教学单元室外平台
12, 13. 办公单元室内局部
14. 教学单元室内局部



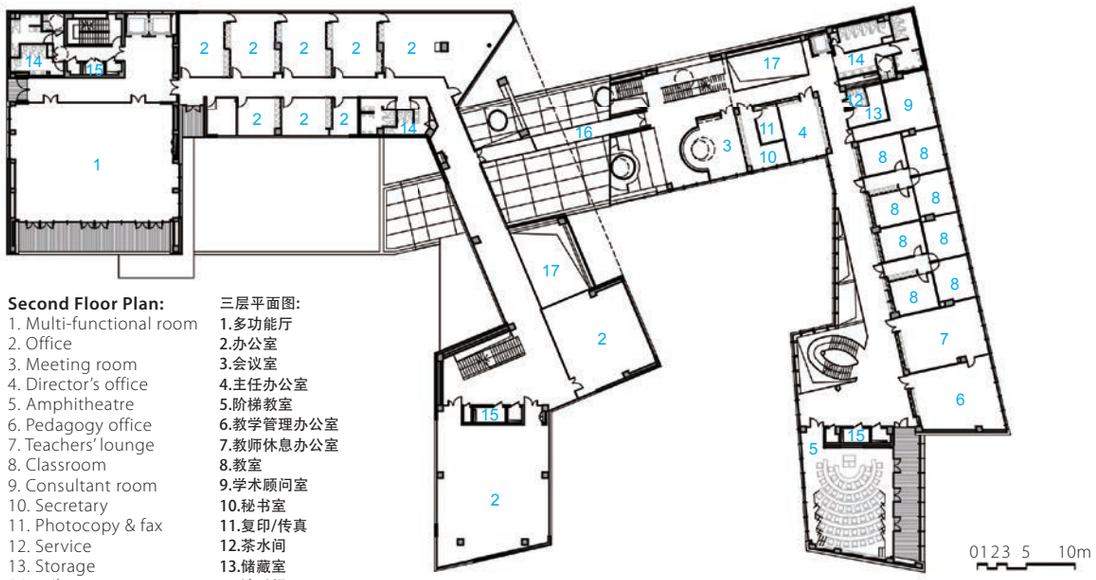
Basement Floor Plan:
1. Exhibition room
2. Coffee room
3. Preparation room
4. Sunken garden
5. Parking
6. Duty room
7. Toilets
8. Storage
9. Property storage
10. Storage for backup
11. Electric room
12. Master electric switch
13. Electric power transformer
14. Ventilation room
15. Water control room
16. Pump
17. Wastewater treatment

地下层平面图：
1. 展厅
2. 咖啡间
3. 准备间
4. 下沉花园
5. 地下车库
6. 值班区
7. 洗手间
8. 储藏室
9. 物业库房
10. 备品备件
11. 强、弱电
12. 大楼总配电间
13. 变电所
14. 风机房
15. 水调控房
16. 水泵房
17. 水处理

10

11

12



Second Floor Plan:

1. Multi-functional room
2. Office
3. Meeting room
4. Director's office
5. Amphitheatre
6. Pedagogy office
7. Teachers' lounge
8. Classroom
9. Consultant room
10. Secretary
11. Photocopy & fax
12. Service
13. Storage
14. toilets
15. Electric room
16. Crossing
17. Void

三层平面图:

1.多功能厅
2.办公室
3.会议室
4.主任办公室
5.阶梯教室
6.教学管理办公室
7.教师休息办公室
8.教室
9.学术顾问室
10.秘书室
11.复印/传真
12.茶水间
13.储藏室
14.洗手间
15.强、弱电
16.天桥
17.上空

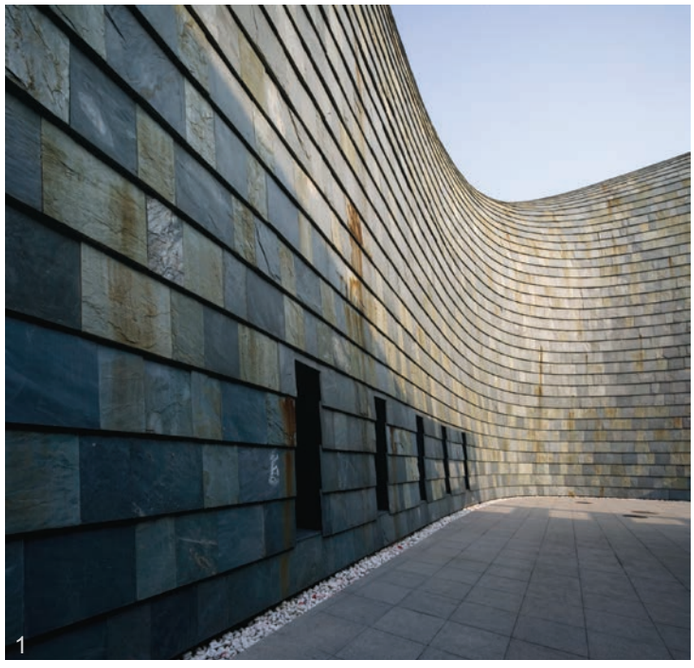
13

14

GALLERY AT CHINA CENTRAL ACADEMY OF FINE ARTS
Beijing
Beijing New Era Architectural Design Ltd.

中央美院美术馆
北京
北京新纪元建筑工程设计有限公司

Site Area: 3,546m²
Gross Floor Area: 14,777m²
Design/Completion Time: 2004/2007
Architect: Beijing New Era Architectural Design Ltd.
Associate Architects: BArata Isozaki & Associates,
The Institute of Building Design of China Academy of Building Research
Photographer: Beijing New Era Architectural Design Ltd.
Client: China Central Academy of Fine Arts
Awards: Silver Award in the National Project Exploration and Design Award, 2010
占地面积：3546平方米
总建筑面积：14777平方米
设计/建成时间：2004年/2007年
建筑设计：北京新纪元建筑工程设计有限公司
合作设计：北京日本矶崎新事务所，建研建筑设计研究院有限公司
摄影师：北京新纪元建筑工程设计有限公司
业主：中央美术学院
奖项：2010年度全国优秀工程勘察设计奖银奖


1

The CAFA Gallery is located at the northeastern corner of the campus, in Wangjing district, Beijing. On a site occupying an area of 2,475 square metres, a six-storey frame-structure building (including two storeys underground), with a total floor area of 14,777 square metres, was built to accommodate various programmmes, including: plant room, storeroom, research room and fabrication room in the underground levels; lobby, lecture hall, café, meeting room and lounge on the ground floor; permanent exhibition hall on the first floor (divided into two parts: one housing ancient works of painting and calligraphy and paintings donated by retired senior professors from CAFA, and the other housing works of current professors); activity halls on the third and fourth floor.

The design of the gallery faced great challenge at the beginning. On one hand, galleries in Beijing generally have traditional architectural forms and exhibition spaces, unsuitable for large, contemporary works exhibition. Therefore, the client required a modern gallery for contemporary art exhibitions to meet international standards. On the other hand, in the new CAFA campus, buildings completed in phase 1 are all in a modest grey tone, with traditional architectural forms featuring rectangles and straight lines. Under such circumstances, this new gallery is required to present its identity and modernity, while at the same time being consistent with the existing buildings, balancing between unity and contrast.

The completed building is composed of three curving façades (with different curvature) and some rectangular bulges. The shape of the three-dimensional façades resembles a beautiful stroke in Chinese characters. The three vertical joining parts of the façades are the entry/exit of the exhibition hall, lecture hall, and back office respectively, while the horizontal joining part forms the roof. The delicate curving façades are perfectly integrated with the existing plot topography, elegant and dignified, and create interesting interiors for exhibition halls.

1. Façade material detail
2. Façade texture
3. Bird's-eye view

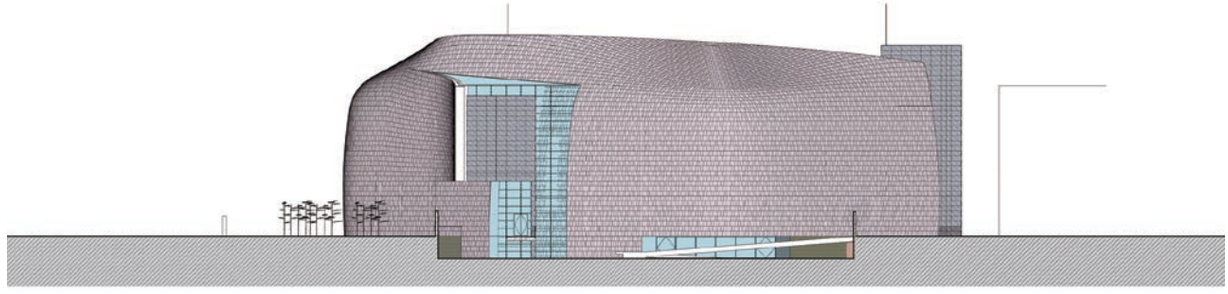
1. 外表皮的材料细节
2. 外表皮的材质
3. 鸟瞰图

中央美院美术馆位于望京花家地南街8号中央美院内，校区的东北角，占地面积为2475 平方米，总建筑面积14777平方米，建成后的美术馆为地上四层、地下二层的框架结构建筑。地下两层主要用于机房、库房、研究室、制作室；一层主要是大厅、报告厅、咖啡厅、会议室和休息大厅；二层为固定展位厅，一部分将用于展示古代书画和美院老教授的赠画藏品，另一部分展示现今在籍教授的作品；三层和四层则作为活动展厅。

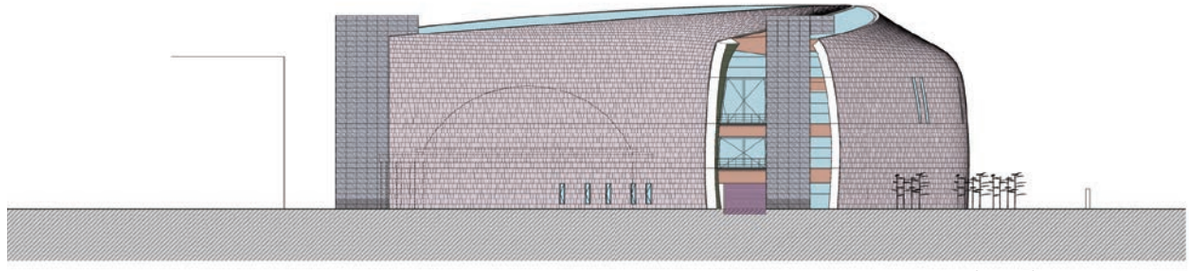
美术馆设计之初面临着极大的挑战。一方面，北京现有美术馆的展览空间和建筑形态都非常传统，不适合展览大型的现代艺术作品。为了适应现代和国际交流的需求，委托方希望设计师能够为北京设计一座可以展览现代艺术作品且具有国际标准的美术馆。另一方面，美院新校区现有一期建筑立面以朴素、协调的灰色为主色调，基本形态以矩形和直线条为主。本美术馆的设计既要展现自身的气质和先进性，又要力求与一期建筑在对比中求得统一、创造变化的和谐。

最终建成的美术馆在型体上主要由三面曲率各不相同的三维曲面壳体围成，局部有矩形突起。该三维曲面不仅造型优美独特，形似中国汉字偏旁“丿”。壳体与壳体间的垂直方向的三处接口即为展厅、报告厅和办公后勤的出入口，而水平方向的接口则形成屋顶。委婉的曲面壳体不仅在外观上与现有地块形状完美结合，给人以优雅、端庄的视觉，而且为内部展厅的空间形态亦增添了丰富的表情色彩。

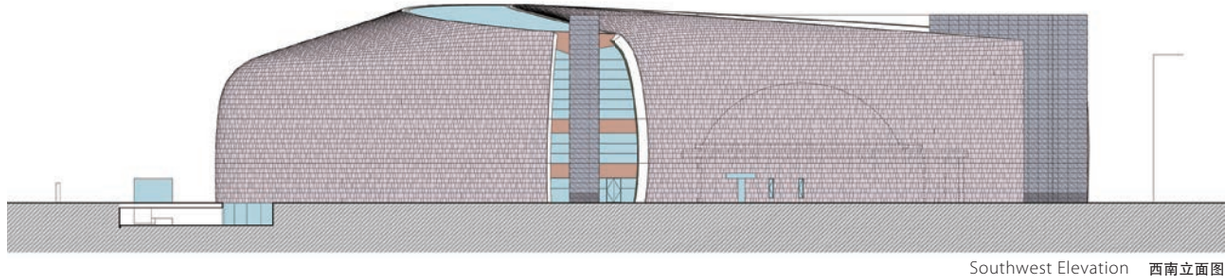
4. Projections mark building entrance
4. 局部的矩形体块为建筑出入口



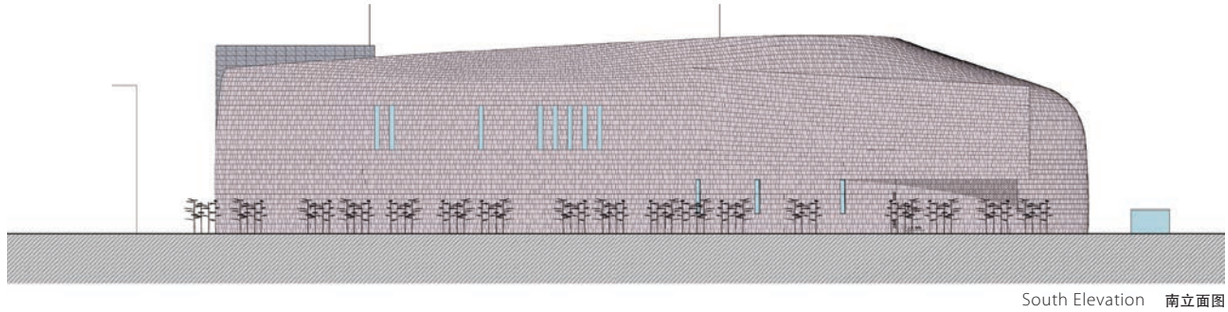
Northwest Elevation **西北立面图**



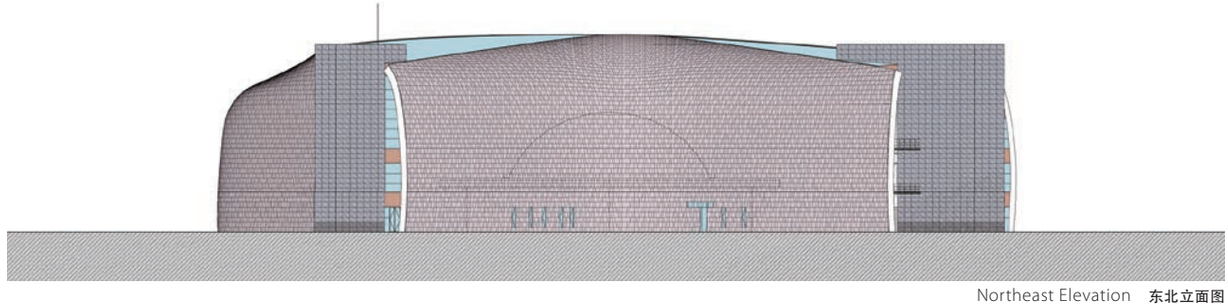
Southeast Elevation **东南立面图**



Southwest Elevation **西南立面图**



South Elevation **南立面图**



Northeast Elevation **东北立面图**

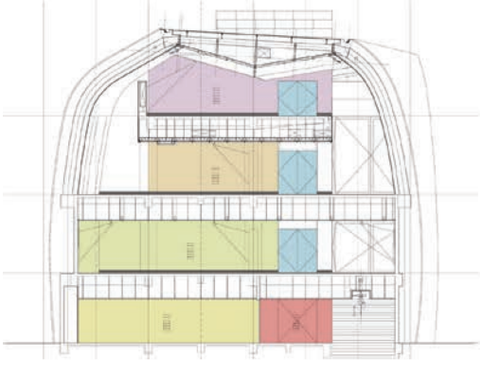
5

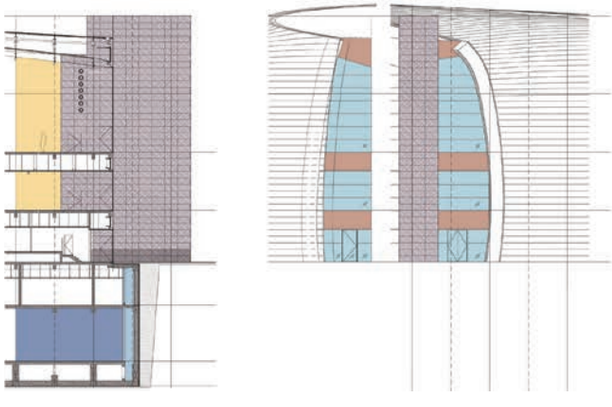
5. Dome as a feature to blend roof and façade
6. Façade
7. Entrance detail
8. Entrance

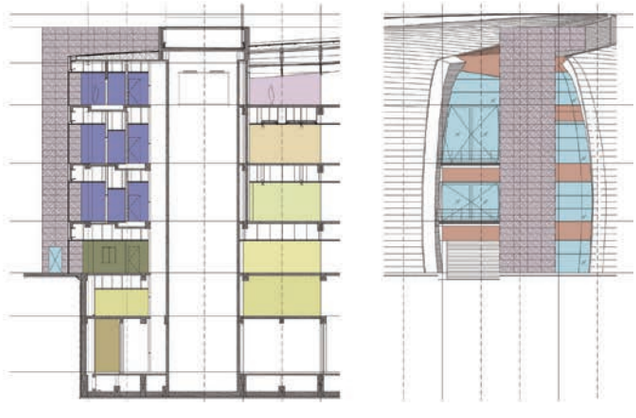
5. 三维曲面使建筑屋面和立面融为一体
6. 建筑外立面
7. 出入口的细节
8. 建筑出入口

6

7

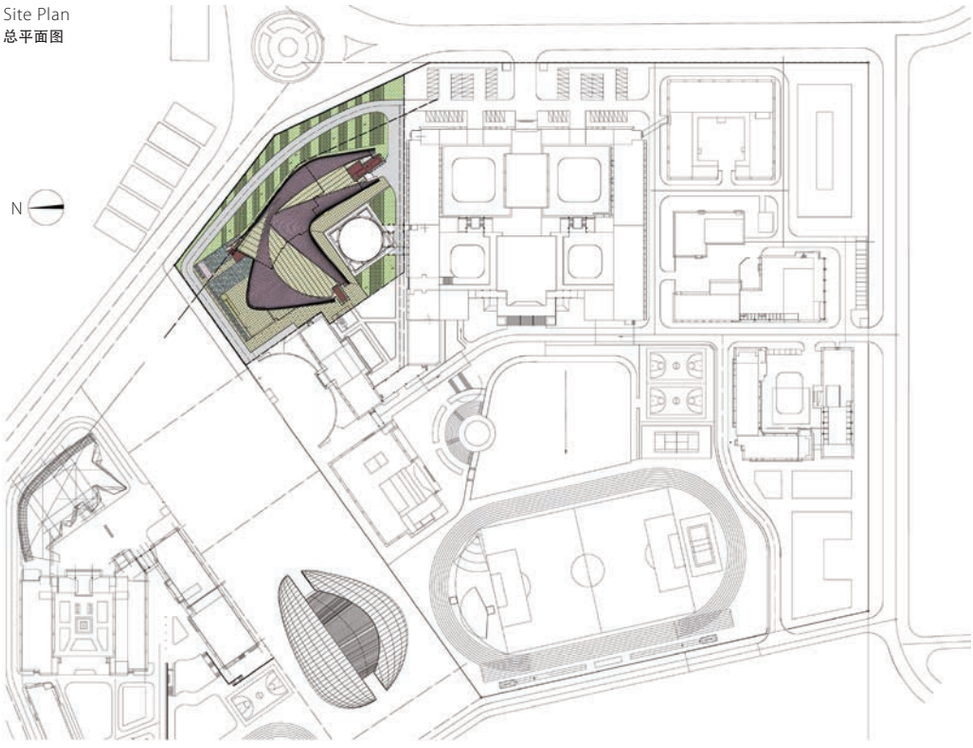






Sections
剖面图

Site Plan
总平面图

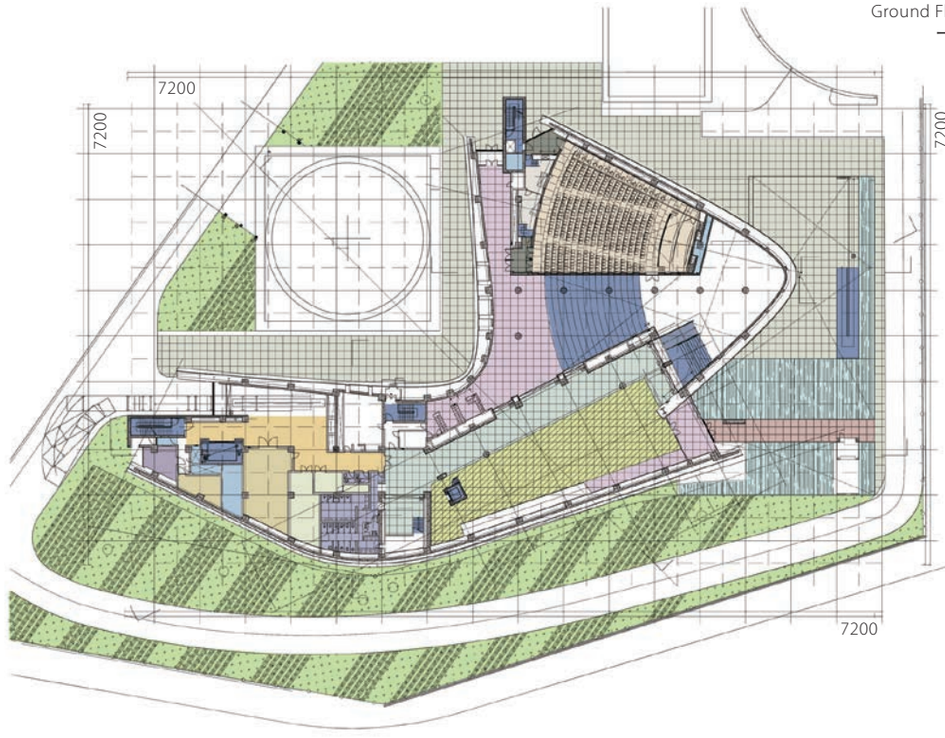


9. Contemporary Art Exhibition Hall on the second floor
10. Interior walls and skylight in the Exhibition Hall
11. Lobby
12. Skylight and ramp
13. Lounge outside the lecture hall

9. 三层当代艺术展厅
10. 三层展厅天窗与室内墙面关系
11. 入口大厅
12. 天窗与坡道
13. 报告厅外的休闲空间

9

Ground Floor Plan
一层平面图



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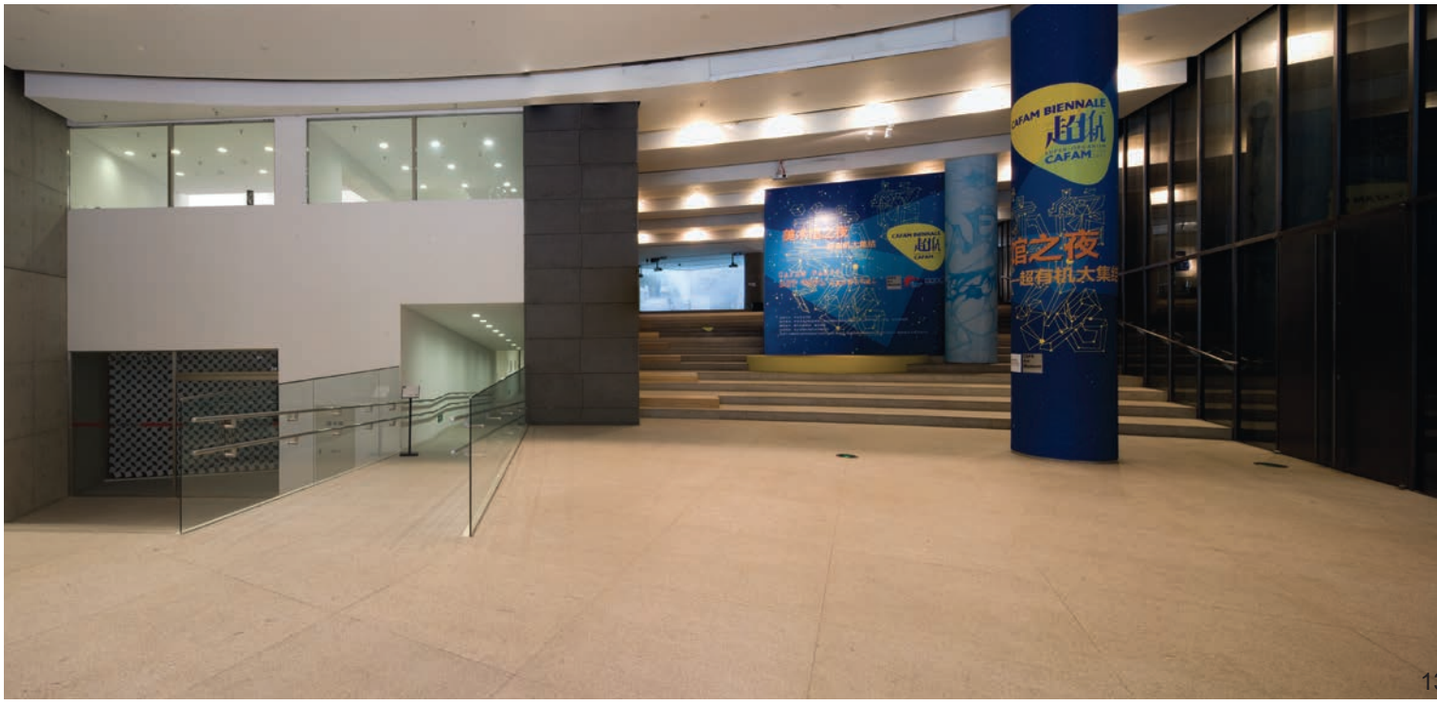


13

CICHENG HIGH SCHOOL
Jiangbei District, Ningbo, Zhejiang Province
DONG Yi / DC Alliance Pte Ltd, Singapore

宁波江北区慈城中学
浙江省 宁波市 江北区
董屹 / DC国际

Site Area: 68,900m²
Base Area: 11,368m²
Gross Floor Area: 38,93m²
Aboveground Floor Area: 36,763m², including:
Teaching Building: 8,907m²
Comprehensive Building: 12,363m²
Administration Building: 2,235m²
Dormitory: 4,980m²
Canteen: 4,415m²
Gymnasium: 3,722m²
Security Room: 141m²
Underground Floor Area: 2,174m²
Site Coverage: 17%
Design/Completion Time: 2007/2009
Architect: DONG Yi / DC Alliance Pte Ltd, Singapore
Photographer: DC Alliance Pte Ltd, Singapore
Client: Education Bureau of Jiangbei District, Ningbo

用地面积：68900平方米
占地面积：11368平方米
建筑面积：38937平方米
地上建筑面积：36763平方米，其中包括：
教学楼：8907平方米
综合楼：12363平方米
行政楼：2235平方米
宿舍楼：4980平方米
食堂：4415平方米
体育馆：3722平方米
门卫：141平方米
地下建筑面积：2174平方米
建筑密度：17%
设计/建成时间：2007年/2009年
建筑设计：董屹 / DC国际
摄影师：DC国际
业主：宁波市江北区教育局

Cicheng Middle School has 60 classes of junior students, and the main teaching facilities include common teaching building, public teaching building, science and technology library, administration building, gymnasium, canteen, dormitory and other auxiliary facilities.

Master Plan
1. Structure of Space and Rhythm
With the design principle of "tradition with innovation, structure with rhythm", the master plan of the school can be concluded as "three sections, one axis, two belts, and four courtyards". To be specific, they are: three sections for three programmes: administration and service section, teaching section, and sports section.
One axis: the north-south axis of the school with the starting point at the school entrance
Two belts: one is the L-shaped "activity belt" at the school centre; the other is the natural "landscape belt" along the water across the school.
Four courtyards: two courtyards in teaching section, a living courtyard, and a circulation landscape courtyard.

Meanwhile, professionally the architects believe that the new school should have the following important features:
1). Multiple enchanting school environments, with which the school could meet educational, social, ecological, cultural and psychological needs.
2). The spaces, both interior and exterior, should be in human scale to give pleasing spatial experience.
3). Buildings in different sections should be easily recognisable, with identifying features to their own. In general, the buildings are simple, clear and elegant.
4). A harmonious relationship should be established among buildings, human beings and environments.

2. Programmes
Since the middle school has relatively complex programmes, the architects tried to reasonably arrange the different sections on the existing site. It is an east-west plot which is crossed by a north-south channel. The architects decided to set the three sections in an east-west direction, with the administration and service section and the teaching section on the two sides of the main road, and the teaching section and sports section separated by the channel. In this way, the different sections are arranged reasonably, in a clear and interconnected way.

The teaching section is no doubt the core of the school. Public teaching spaces such as classrooms, labs and library are integrated into a multi-purpose complex, contrasting with traditional introversive class units. The sunken plaza between the two parts becomes a lively activity centre for the whole school.

3. Architecture
For school architecture, there are strict requirements for space between buildings to avoid interference between each other. Meanwhile, as standard classrooms and labs, the room size and depth are specifically required. After learning these requirements, the architects established a balance that both guarantees the quietness of learning environments and creates comfortable scale and atmosphere. To be specific, administration building and students' dormitory are arranged on the south; canteen, comprehensive building and playground are set on the north, and the teaching section is put at the core of the school. In this way, the main urban roads are kept intact and the learning environments are well protected from noise.

4. Circulation and escape
Circulation on the site is well planned to have separated routes and


崇本楼
CHONGBENLOU

1. Façade detail
2. Teaching building
3. Teaching building façade facing the street

1. 教学楼外立面的细节
2. 教学楼
3. 教学楼沿街立面

Site Plan (Below):
1. School main access
2. Sunken plaza
3. Teaching Building
4. Teaching Building (Building #2)
5. Comprehensive Building (Building #5)
6. Gymnasium (Building #6)
7. Canteen
8. Dormitory (Building #4)
9. Administration Building (Building #3)
10. Vehicle parking
11. Bicycle parking
12. Basketball court
13. Volleyball court
14. Sports field (400m track)
15. School subsidiary access
16. Central plaza

总平面图（下图）：
1. 学校主要出入口
2. 下沉广场
3. 教学楼
4. 教学楼（二号楼）
5. 综合楼（五号楼）
6. 体育馆（六号楼）
7. 食堂
8. 宿舍楼（四号楼）
9. 行政楼（三号楼）
10. 机动车位
11. 自行车停放处
12. 篮球场
13. 排球场
14. 运动场（400米）
15. 学校次要出入口
16. 中心广场

3

entrances for pedestrians and vehicles. A large bicycle parking lot is located at the main entrance on the south, and several small bicycle lots are arranged in the living section for the convenience of students. Entrance for the underground car park is arranged at the school centre, so cars won't be driven into the core area if not necessary. The entrance axis and core activity belt are the main areas for pedestrians. The ground floor of the comprehensive building is open to connect the pedestrian entrance on the east with the central plaza, with a circulation encircling the sports section.

Vehicles enter the school through the roads on the south and north, while pedestrians enter from the entrance on the road that encircles the lake. Motor vehicles enter the underground car park through the entry at the east of the main school entrance. The total capacity of both aboveground and underground car park is 61, in accordance with the urban plan.

5. Landscape

In this project, landscape design plays an important role in creating the desired atmosphere for the whole school. The existing exterior spaces are re-organised into plazas, streets, courtyards and sky garden. With the extensive water feature, the public, semi-open and private spaces are all integrated into a unified landscape system. The boundary between interior and exterior is blurred, and there is no absolute exterior space or interior space; instead, they are all transitional spaces. The central plaza is proposed to be named after the Ci Lake from which the architects drew inspiration. It is a vital part in creating the unique learning environment.

Design Principles

1). Highlights on sharing and openness

a. The teaching complex: an independent micro-city structure with staircases between different levels as long as possible and decreasing openness as one goes upper and upper.

b. Structures built on stilts, multi-purpose circulation spaces, and three-dimensional resting places. Users will participate as much as possible.

c. Learning is possible everywhere. This is a symbol of transition from industrial society to information society in which information is acquired in a variety of ways.

2). Integration of modernity and locality

a. Architectural configuration: modern configuration + local materials

b. Spatial structure: modern space + local structural models

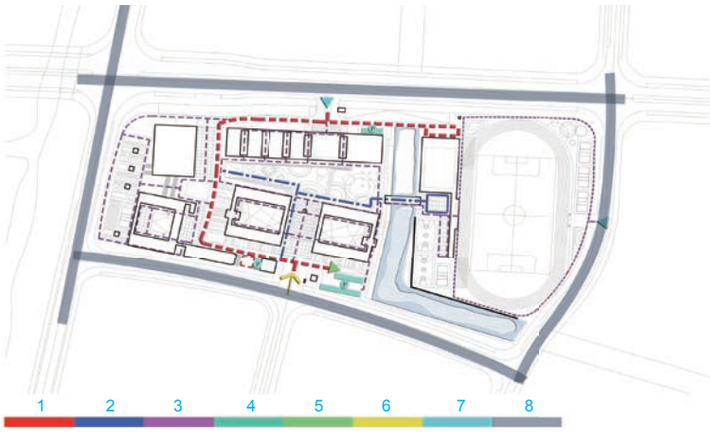
c. Spirit of space: modern functions + local culture

Architectural Design

1. Programmes

The project mainly consists of seven buildings: administration building, two teaching buildings that form a courtyard, comprehensive building that accommodates common classrooms, public classrooms, lecture hall and library, canteen, dormitory and playground. The teaching buildings are four-storey high, with a height of 3.9 metres, occupied by four grades independently, interconnected by galleries and connected with teacher's offices with staircase terraces. The comprehensive building is five-storey high, with a height of 3.9 metres, occupied by common classrooms on the ground floor and by the library, lecture hall and public classrooms on the upper floors. On the second floor, a corridor is connected with the teaching building. On the roof of the lecture hall, a terrace is designed for activities. The administration building is five-storey high, with a height of 3.6 metres, connected with the teaching building on the first floor. The canteen is three-storey high, with student's dining halls on the ground and first floor (floor height: 4.2 metres) and teacher's dining hall on the second floor (floor height: 3.9 metres); besides, a sky garden is located on the second floor facing the central plaza. The dormitory is five-storey high, with a height of 3.6 metres, with teacher's lodging on the south connected with the administration building. The two-storey playground is occupied by a swimming pool on the ground floor (floor height: 6 metres) and a basketball court on the first floor (floor height: 10 metres).

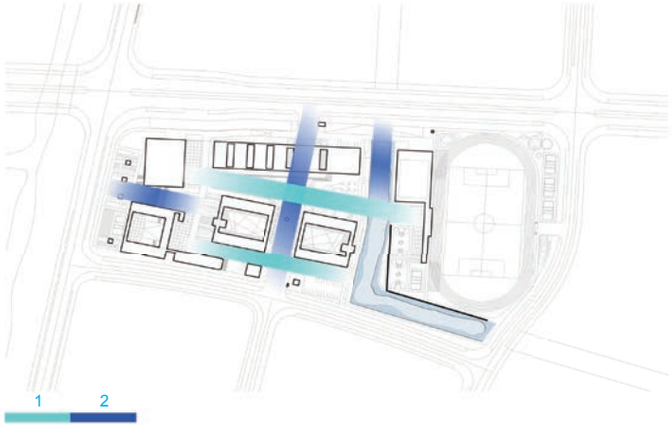
Material and Culture
材料和文化



Circulation (Left):
1. Vehicle flow
2. Fire escape passage
3. Pedestrian flow
4. Parking aboveground
5. Access of parking underground
6. Main entrance
7. Subsidiary entrance
8. Urban roads

交通与疏散（左图）：
1. 车行流线
2. 消防流线
3. 步行流线
4. 地面停车
5. 地下车库出入口
6. 主要入口
7. 次要入口
8. 城市道路

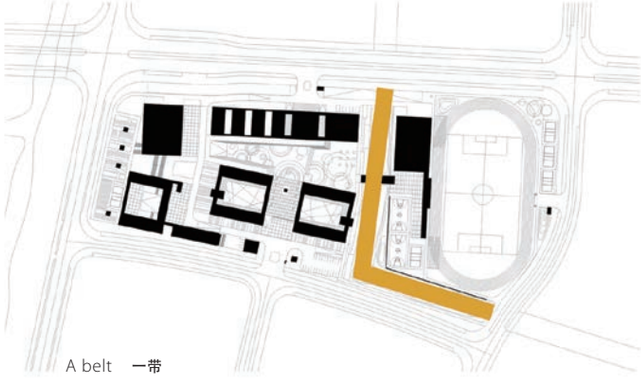
View Analysis: 视线分析：
1. Main view **1.** 主要视线通廊
2. Visual gallery **2.** 视觉通廊

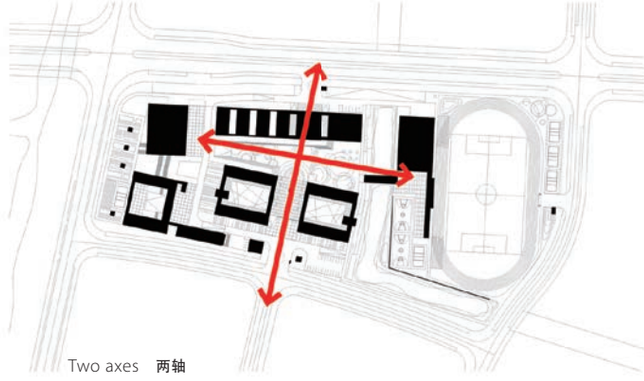


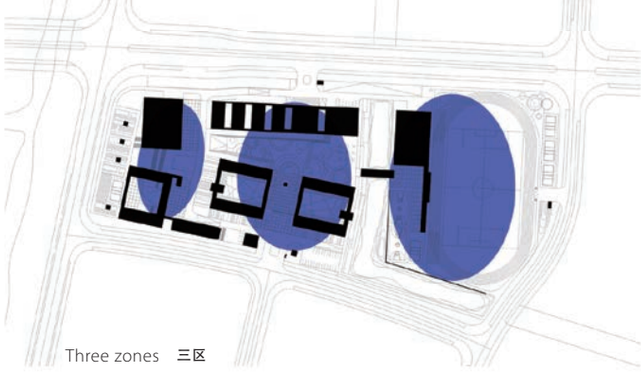
Landscape Logic:
1. Central plaza
2. Courtyard
3. Waterscape
4. Lawn
5. Concentrated greenery
6. Mini-plaza

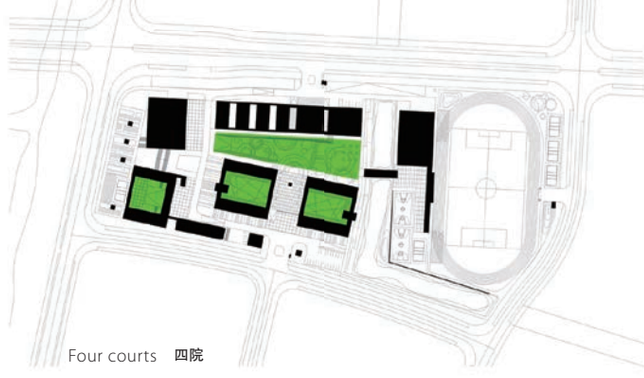
景观的逻辑：
1. 中心广场
2. 庭院
3. 水景
4. 草坡
5. 集中绿化
6. 小型广场

Structure and Dynamism 空间框架与节奏


A belt 一带


Two axes 两轴


Three zones 三区


Four courts 四院

2. Spaces

The school is like a micro-city, with an open plan and a rich variety of spaces. It has to not only meet the needs of teaching and learning, but also provide multiple spaces for free communication. Therefore, the architects attached great importance in creating public spaces to reflect social changes. Closed walls are abandoned; roof terrace is created; architecture is built on stilts; spaces for learning and communication with different scales are purposefully arranged to encourage equal communication. The architects believed that there shouldn't be a clear goal; instead, people could have different understanding and interpretation, and the users would endow the buildings with their own characteristics through use. The architecture should be flexible to cope with different needs, but it does not simply mean empty spaces ready for flexible use; rather, it should have the feature of – as the architects called it – multivalence, in terms of extensive possibility and efficiency. In the teaching section, with the open ground floor and sky garden, spaces feel like both interior and exterior so that you can't say whether you are inside a building or in between. The architecture is perfectly integrated with natural environment.

3. Elevation

Since it is the first educational project in the newly developed Cicheng Town, the client required the complex to be an iconic architecture for the town. The architects believed that architectural identity comes from uniqueness, clear configuration and intense contrast with the urban setting. In this project, the uniqueness lies in a cultural and ideological sense. With respect for traditional urban plans, spatial scales, quiet environment and local ideology of modesty, the architects combined modernity with locality in the architecture design, and resulted in the unique place in terms of spatial experience, visiting sequence, material and culture.

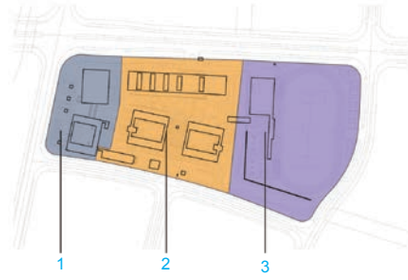
As for architectural configuration, modern and local features are both highlighted. The contemporary and simplistic buildings are endowed with a bit of traditional beauty, a style that is highly unique and enchanting. The buildings with different shapes create a rhythm that highlights the mass of the complex and its educational function. Paints, steel, glass, black bricks and timber are the main façade materials. With the limited elements, a piece of rhythmic "flowing music" is created on the façades.

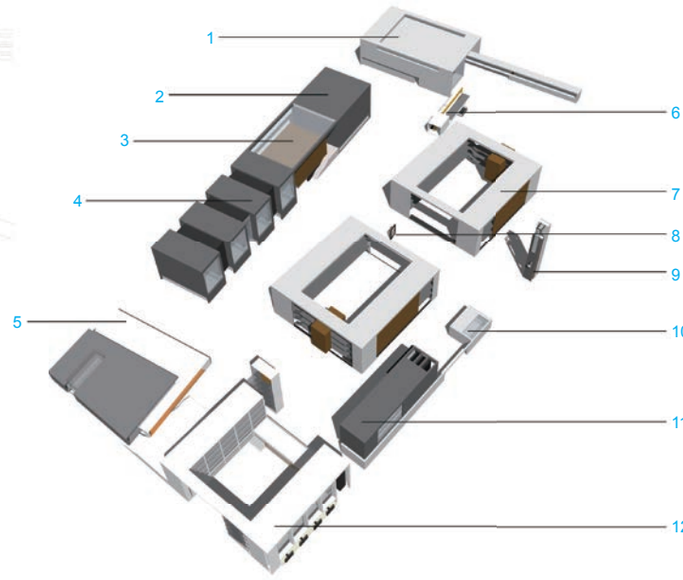
4. Material and Culture

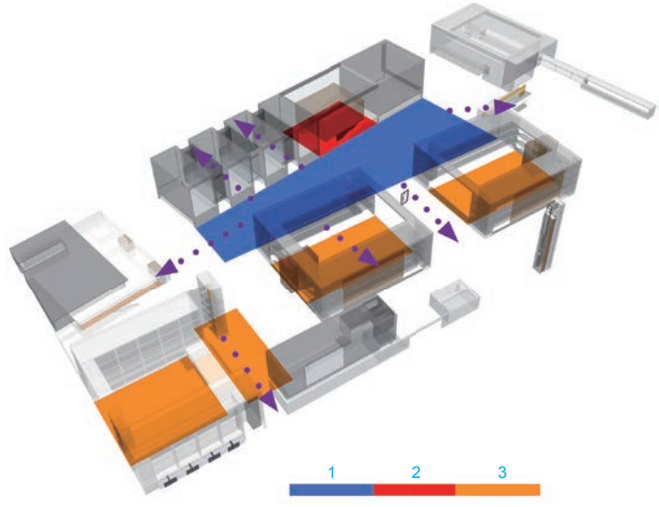
Requirements on tradition, locality, culture… With such a weight on the mind, the architects couldn't face the design relaxed and freely. Fortunately, in contemporary context, material could be a ready sally port. With white and grey paints combined with some timer, black bricks and steel, the modern and simplistic buildings are endowed with a somewhat reminiscent feel, silently bringing out an air of culture.

Programmes (Right):
Three Zones:
1. Service zone
2. Teaching and administration zone
3. Sports zone
Architecture Layout:
1. Fengyu playground
2. Library
3. Lecture hall
4. Public classroom
5. Canteen
6. Bridge house
7. Teaching units
8. Sculpture
9. Tower at main entrance
10. Parents waiting area
11. Administration Building
12. Students' dormitory and teachers' dormitory

功能梳理（右图）：
区域分布：
1. 后勤服务区
2. 教学行政区
3. 体育运动区
建筑分区：
1. 风雨操场
2. 图书馆
3. 报告厅
4. 公共教室
5. 餐厅
6. 桥屋
7. 教学单元
8. 雕塑
9. 主入口塔楼
10. 家长等候区
11. 行政办公楼
12. 学生宿舍、教工宿舍







Dialogue and Space Interaction:
1. Central plaza
2. Stilted space
3. Courtyard
4. Steps
5. Spaces

对话与空间交往：
1. 中心广场
2. 底层架空
3. 庭院
4. 台阶
5. 空间示意

4

4. Central square
5. Landscape around teaching building
6. Teaching building view from basketball court
4. 中心广场
5. 教学楼周围景观
6. 从篮球场望教学楼

5

6

慈城中学的校区规模为60班初中，主要教学建筑包括普通教学用房、公共教学用房、科技图书用房、行政办公用房、体育用房、餐厅用房、集体宿舍用房和其他各类辅助用房等。

总平面布置

1. 空间构架和节奏

秉承“传承创新，同源同构”的设计原则，整个校园的架构可概括为“三区、一轴、两带、四院”，具体如下：

三区：三大功能分区（行政后勤服务区、教学区、体育运动区）；

一轴：以入口为起点的南北向礼仪轴；

两带：一是校园核心活动带，呈L形由南向东位于校园中心；二是沿水体形成的自然滨水景观带，由北向东穿过校园；

四院：两个教学单元庭院、一个生活庭院与一个交通景观庭院，体现出不同的文化特色。

同时，建筑师从专业的角度观察和分析，赋予校园这样几个重要特征：

（1）复合的迷人校园环境。它能够承载功能的、社会的、生态的、文化的和心理的需求。

（2）它的环境尺度、空间尺度、建筑尺度同时与空间体验相结合，造就精致而有趣的多层次场所。

（3）它的空间系统能够有明确的可识别性，建筑形象简洁明快、协调优雅，形成鲜明特色。

（4）它特有的人文气息和动态需求促成了不同建筑之间、人与环境之间协调依存的和谐关系。

2. 功能的梳理

为了使现有基地能承载复杂的学校功能，有必要对其作进一步梳理。基地沿东西向横向展开，又由于水渠沿南北向将其一分为二，因此将行政后勤服务、教学、体育运动三大功能区块沿东西向展开，其中行政后勤服务和教学区分布校园主要道路两侧，教学行政和体育运动区则以水渠隔开，自然地做到分格有致，动静相宜，各自形成完整的功能群落。

在建筑细分区域里，教学区无疑成为整个校园的中心，公共教室与实验室、图书馆等相对开放的场所合并为多功能的综合体，与普通教学单元内向型的院落形成对比，同时二者之间的下沉广场成为富有张力的生活中心。

3. 建筑定位

作为学校建筑，为防止相互之间的干扰，教学建筑有其特殊的间距要求，同时作为标准教室和实验室，在开间和进深上也都有具体的要求。因此在设计中对这些要求作了研究，既保证互不干扰又保证舒适的尺度和氛围。具体来说，沿南侧横八路布置行政办公和学生宿舍，沿北侧横一路布置食堂、综合楼和风雨操场，将教学组团布置在校园中心，这样既保持沿城市主要道路的界面完整，同时保证教学环境相对安静，不受干扰。

4. 交通与疏散

设计对整个场地的交通系统进行了整理，将人车分流，合理安排各出入口，为方便使用，校园南侧主入口处设置大面积的自行车停车场，同时在生活区设置相应的自行车停车场，靠近校园中心设地下车库入口，车行不进入核心活动区，但必要情况下可环通全场。步行区域以入口主轴和核心活动带为主，打通综合楼底层形成更多穿越，校园东侧设步行入口，步行流线可环通运动区并与校园中心广场相接。

基地车行入口由南侧横八路和北侧横一路进入，东侧沿环湖路设置人行入口。机动车由校园主入口东侧的车库出入口进入地下停车库，同时在主入口设置停车场。地下车库和地面停车共设有61个车位，符合城市规划要求。

5. 景观的逻辑

在本项目的设计中，景观设计在整体氛围的营造中占有了重要的位置。设计将现有的外部空间分化整合，以广场、街巷、庭院和空中花园的形态表现出来，再配合开放的滨水环境，从公共到半开放到私密，从集散

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到活动到观赏，共同形成了一个完整的景观空间体系。建筑形式与外部空间互相提供穿过各自界限的最大可进入性，内部与外部的界限变得不那么明确，既不是绝对的内部，也不是绝对的公共，形成一种可进入性的过渡性结构。校园的中心广场希望以慈湖命名，场地设计灵感来源于湖面泛起的涟漪，形成独特的教学环境氛围。

设计原则

（1）强调共享和开放

a. 教学综合体的设计、资源的整合：自我完成的微型城市结构，区域内空间的层级通道尽量加长，开放性随着基本动线逐级递减。

b. 架空的开放空间、多功能的交通空间、立体的休憩空间：强调负空间，将使用者参与的可能性最大化。

c. 学习无处不在，体现工业社会向信息社会转化，强调接收信息的多种渠道。

（2）融合现代与本土

a. 建筑形象：现代的形象+本土的材料

b. 空间组织：现代的空间+本土的模式

c. 场所精神：现代的功能+本土的文化

建筑设计

1. 建筑功能

本项目由七幢主要建筑组成——行政办公楼，两幢合院式教学楼，融合了合班教室、公共教室、报告厅和图书馆综合楼，食堂、宿舍和风雨操场。其中教学楼四层，层高3.9米，按四个年级设置，分别独立，有连廊相通，同时通过楼梯平台的高差设置与教师办公部分联系；综合楼五层，层高3.9米，底层为合班教室，二层以上由东向西分别为图书馆、报告厅和公共教室，在三层有连廊与教学楼相连，报告厅屋面设置空中活动平台；行政办公楼五层，层高3.6米，在二楼位置与教学楼相连；食堂三层，一层和二层为学生食堂，层高4.2米，三层为教工餐厅，层高3.9米，并设置空中花园朝向校园中心广场；宿舍五层，层高3.6米，南楼顶层为教师宿舍并与行政办公楼相连；风雨操场二层，底层层高6米，为游泳池，二层层高10米，设置篮球场。

7. School entrance
8. Inner courtyard of teaching building
9. East view of teaching building along the river
7. 学校入口
8. 教学楼内院
9. 教学楼东部沿河景观

2. 空间设计

校园本身就像一个小型微缩的城市，平面开敞、自由，空间丰富，不仅需要满足教与学（唤起）的功能，还要提供各种自由交往的空间。这是重视改善公共领域的出发点，以便更好地培育和反映社会的相互作用，设计正是加强了这一功能，打开封闭的墙壁，利用屋顶平台，架空建筑的底层，插入各种尺度的学习交流空间，提供对等交流的场所。设计师认为应以这样的方式设计，使结果不是那么直接地表达一个毫不含糊的目标，允许不同的理解，使它可以通过使用用途形成自身的特征。它应该不时地诱发适应特定境况的特别反映；因此它绝不仅应该是中性和灵活的，它必须具有设计师所说的“多价性”的宽广的高效性。在教学区域，由于架空层和空中花园的参与，给人一种既是“内部”，也是“外部”的感受，二者之间有着强烈关联，以至于你无法分辨是在一座建筑物的内部抑或在建筑之间，空间具有了更强的可进入性，与外部结构得到了更紧密地结合。

3. 立面造型

作为新慈城开发的第一个教育文化建筑，业主对建筑的标志性做出了要求，希望其成为地区发展可参照的对象，代表这一区域的城市形象。这种标志性的关键物质特征是在某些方面具有唯一性，有清晰肯定的形式，与背景形成强烈的对比。在本项目中，这种唯一性是作为一种文化的、意识的延续而存在的。通过对传统的城市肌理、空间尺度和比例，恬淡的学习氛围与当地儒学精神的传统的追求，体现现代+本土的建筑精神，从场所营造、空间序列、材料和文化等各个方面塑造独特的场所精神。

在造型设计中，集中体现了现代本土建筑的特点，以现代、简约又蕴含传统美的风格形成了清新而鲜明的个性，给人以强烈的感染。在形体处理上注重韵律与体型的变化，突出体现建筑的体量感及教育建筑的特性，材料以涂料、钢材、玻璃、青砖、木材为主。利用有限的造型元素进行变化，使建筑立面形成流淌的音乐般的韵律美。

4. 材料与文化

传统的、地方的、文化的，这些太想传达的和精神的负担使建筑师难以轻松和自由的面对设计。如何在现代背景下做到举重若轻，材料是一个可供选择的突破口。该设计中，白色和灰色涂料配以少量木材、青砖、钢材，使简洁现代的建筑形体呈现出一种模糊的怀旧情绪和文化传承。

SHENYANG NUMBER TWO HIGH SCHOOL, NORTH DISTRICT
Shenyang, Liaoning Province
LV Panfeng / New World Architecture Design Co., Ltd., Shenyang

沈阳二中北校
沈阳市农业高新产业开发区
沈阳新大陆建筑设计公司

Site Area: 158,700m²
Gross Floor Area: 87,000m²
Design/Completion Time: 2004-2005/2006
Architect: LV Panfeng / New World Architecture Design Co., Ltd., Shenyang
Design Team: ZHENG Min, ZENG Jie, LIU Na, LI Xinwei
Photographer: LV Panfeng
Client: Number Two High School
Greening Rate: 65%
Plot Ratio: 0.51
Building Height: 23.95m
Structure: Frame Structure
占地面积：158700平方米
建筑面积：87000平方米
设计/建成时间：2004-2005年/2006年
建筑设计：吕攀峰 / 沈阳新大陆建筑设计公司
设计团队：郑敏，曾捷，刘娜，李昕伟
摄影师：吕攀峰
业主：沈阳市第二中学
绿化率：65%
容积率：0.53
建筑高度：23.95米
结构形式：框架

Number Two High School at North District is located at New District at the North of Shenyang, on the south bank of Pu River, with New Town Road on the south, South Pu Road on the north, and North Dili Street on the east. An architecture for 48 classes of high school students is sited on a plot of 158,700 square metres.

Bird's-eye View **鸟瞰图**

The design principle of this project is to take advantage of the site and make some reasonable changes, illustrating the frozen music with plain notes. The surrounding natural environment is to be kept as much as possible.

The site is a sloping plot with the south end higher than the north. In the middle there is a terrace with a height difference of three to four metres, which is well adopted in the one-storey central library. The library connects the single buildings together, forming a two-storey circulation system linking interior spaces on different heights. Varied heights and interior/exterior spaces, as well as tens of existing trees, provide a beautiful environment for the teachers and students at Number Two High School.

Façades of the teaching building are made of 300mm-wide building blocks, either grey-painted or clad with grey stone. Fixed vertical louvres are adopted on façades of the stadium in order to reduce the penetrating sunshine for a better interior lighting effect.

In classrooms in the main teaching building, columns are arranged in a grid system of 9.0mX7.8m. The floors are made of high-tensile thin plates, with less weight and thickness than cast-in-situ ones, thus reducing project cost. The columns in the library are regularly distributed, and a special cross roof girder is adopted. A semi-exterior courtyard is designed in the centre of the library, which has a steel-structured roof with glass skylights to ensure natural lighting and ventilation for the semi-underground library.

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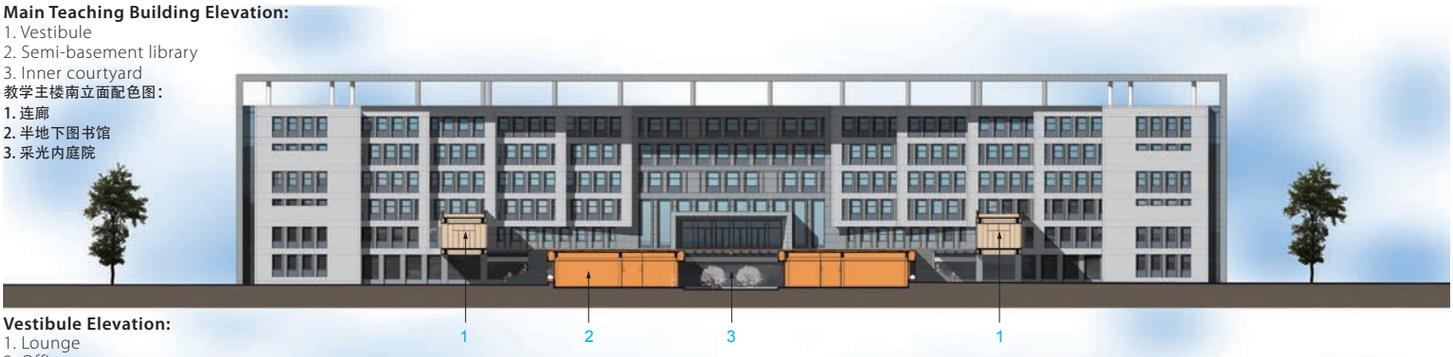
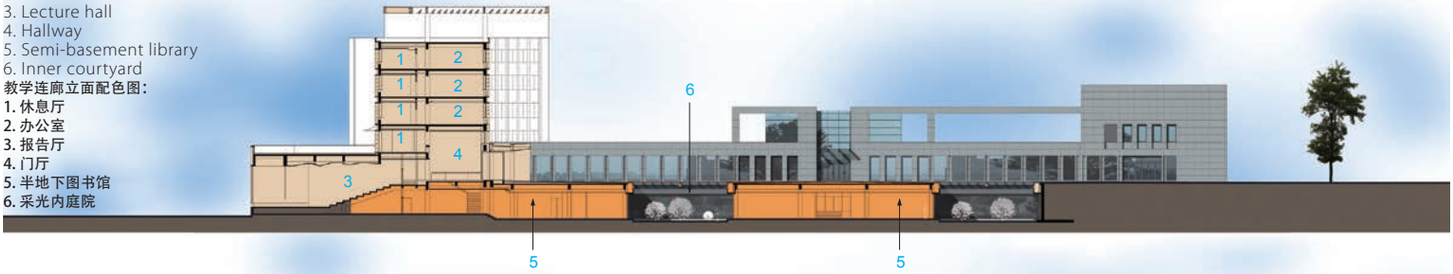
Main Teaching Building Elevation:
1. Vestibule
2. Semi-basement library
3. Inner courtyard

教学主楼南立面配色图：
1. 连廊
2. 半地下图书馆
3. 采光内庭院



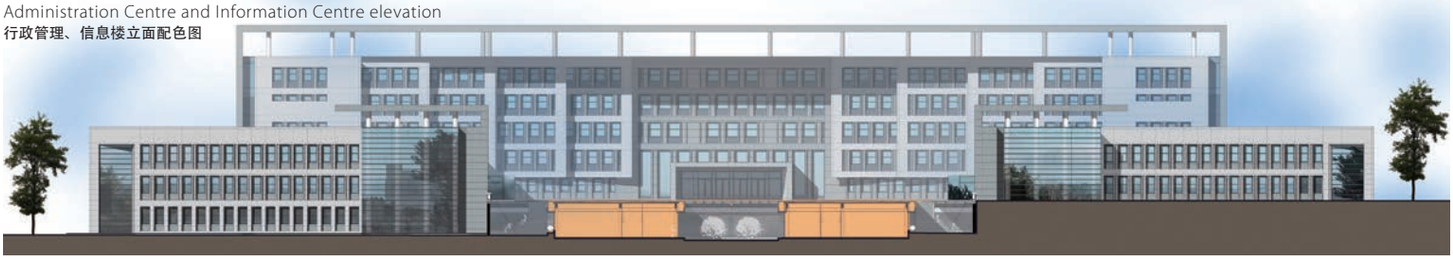
Vestibule Elevation:
1. Lounge
2. Office
3. Lecture hall
4. Hallway
5. Semi-basement library
6. Inner courtyard

教学连廊立面配色图：
1. 休息厅
2. 办公室
3. 报告厅
4. 门厅
5. 半地下图书馆
6. 采光内庭院



Administration Centre and Information Centre elevation

行政管理、信息楼立面配色图



1. Plaza at the main teaching building
2. Main teaching building
1. 教学主楼广场
2. 教学主楼

沈阳二中北校选址于沈北新区蒲河南岸，新城路北侧、蒲南路南侧、地利北街西侧。用地面积158700平米，是48个班的高级中学。

该方案设计的指导原则是“型有其用、变有其理”，用朴实的音符诠释凝固的音乐，充分利用现有地势并尽力保留现状环境。

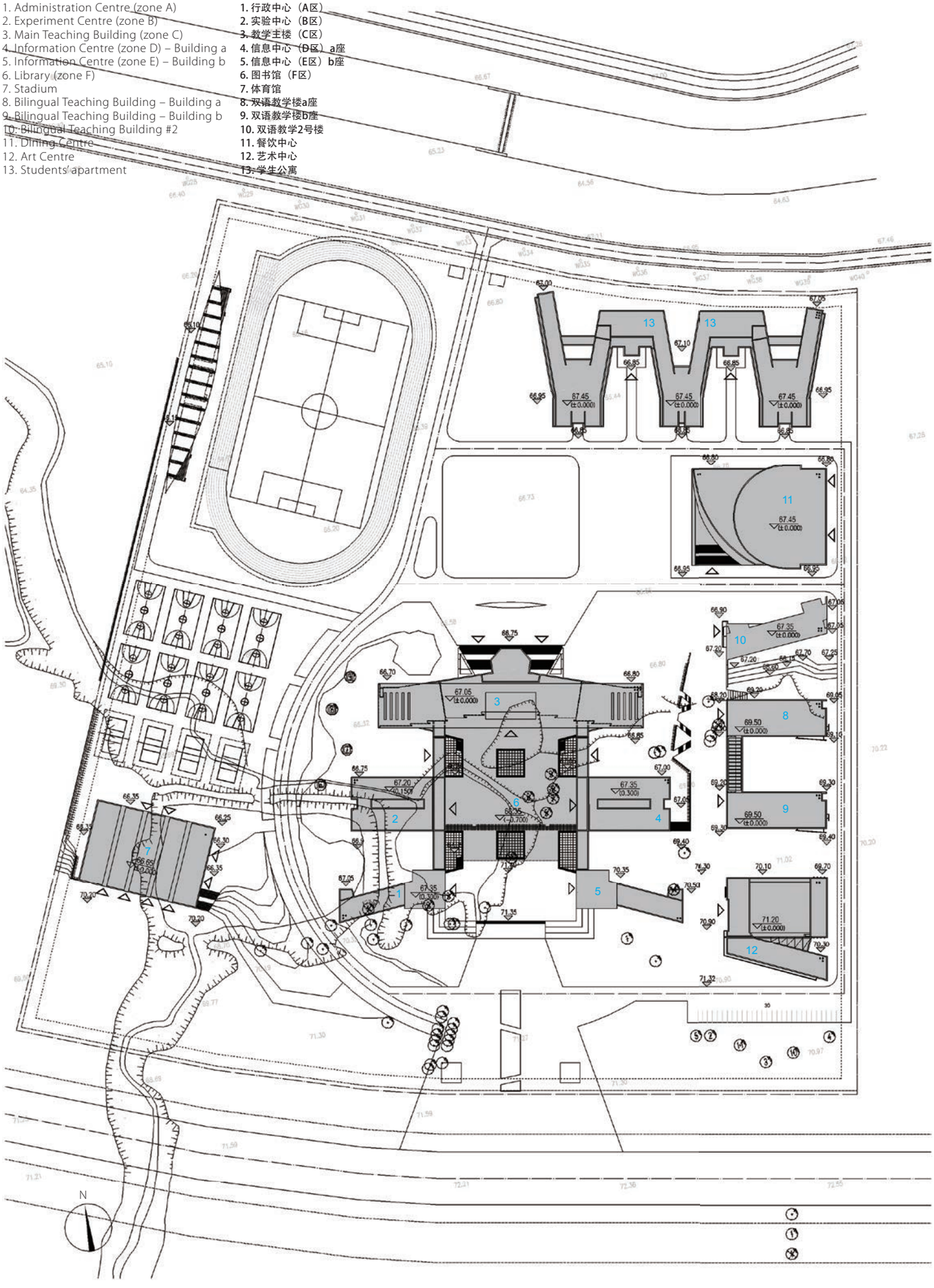
基地内地势走向由南向北逐渐降低，基地中部有3至4米落差的台地。设计中充分利用了这一地势特征，将3至4米的台地断面设计为一层高的中心区图书馆。图书馆将各单体教学楼有机结合在一起，形成的双层水平交通系统联系着位于不同标高的室内外空间。多变的地势、丰富的室内外庭院空间同极力保留的几十棵原状树为师生提供了优美的教学及生活环境。

校区建筑外墙为300厚建筑砌块，外饰面采用灰色涂料及灰色石材。体育馆的外墙采取了固定垂直百叶式的构造方式，用来削弱直射阳光对室内照明的影响，减少室内运动场地的眩光。

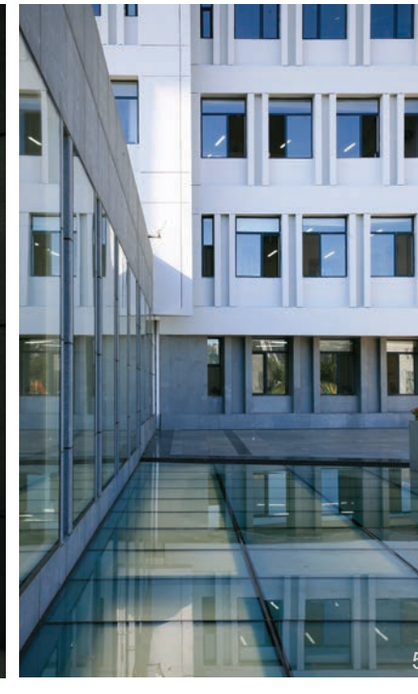
主教学楼教室柱网为9.0米X7.8米，楼板采用了高强薄壁管楼板结构，减小了现浇板厚及自重，从而降低了工程造价。图书馆柱网比较均匀，在屋面梁特别采用十字梁布置；图书馆中心部位设置半室外庭院，屋面为钢结构加上玻璃采光顶，用来为半地下图书馆提供自然采光及通风。

Site Plan:
1. Administration Centre (zone A)
2. Experiment Centre (zone B)
3. Main Teaching Building (zone C)
4. Information Centre (zone D) – Building a
5. Information Centre (zone E) – Building b
6. Library (zone F)
7. Stadium
8. Bilingual Teaching Building – Building a
9. Bilingual Teaching Building – Building b
10. Bilingual Teaching Building #2
11. Dining Centre
12. Art Centre
13. Students' apartment

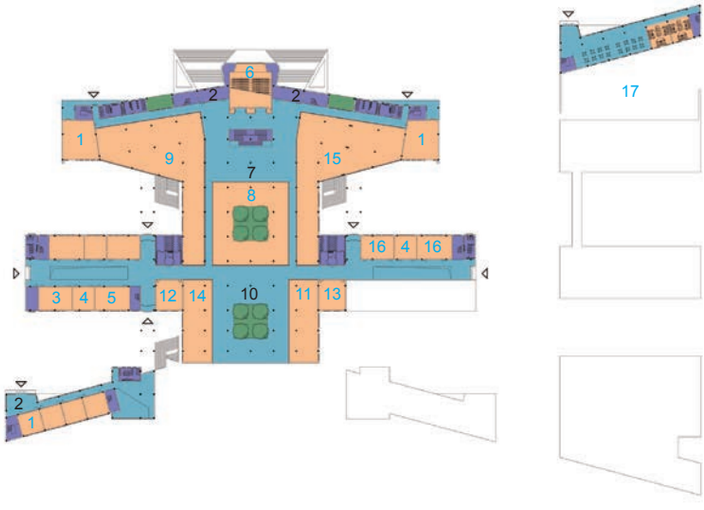
总平面图:
1. 行政中心（A区）
2. 实验中心（B区）
3. 教学主楼（C区）
4. 信息中心（D区）a座
5. 信息中心（E区）b座
6. 图书馆（F区）
7. 体育馆
8. 双语教学楼a座
9. 双语教学楼b座
10. 双语教学2号楼
11. 餐饮中心
12. 艺术中心
13. 学生公寓



3. Linking vestibule viewed from library roof
4. Vestibule in the integrated building
5. Detail of main teaching building
3. 从图书馆屋顶看连廊
4. 综合楼连廊
5. 教学主楼细部

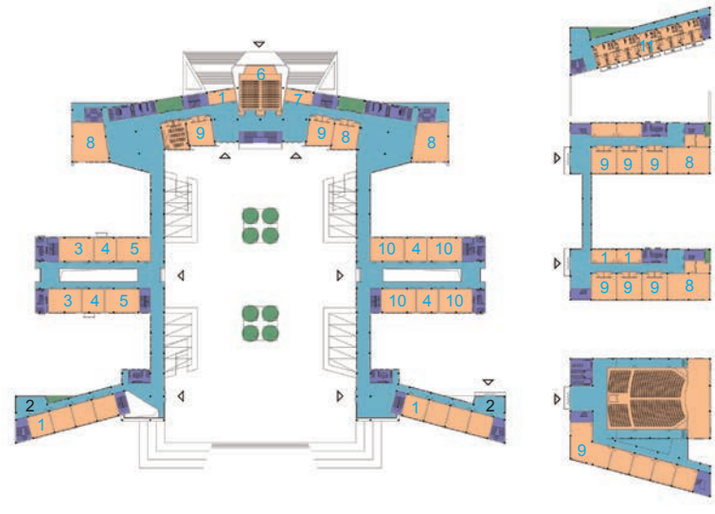


6. Integrated building courtyard
7. Existing tree preserved
6. 综合楼院落
7. 校园内保留的原有树木



Main Teaching Building Ground Floor Plan:
1. Office
2. Lounge
3. Presentation room
4. Preparation room
5. Laboratory
6. Lecture hall
7. Internet hall
8. E-books reading room
9. Reading room
10. Exhibition room
11. Periodicals
12. Photocopy
13. Administration room
14. Teachers' reading room
15. Book storage
16. Computer room
17. Café

主教学楼一层平面图:
1. 办公室
2. 休息室
3. 演示
4. 准备室
5. 实验室
6. 报告厅
7. 检索大厅
8. 电子阅览
9. 阅览室
10. 展厅
11. 期刊室
12. 复印室
13. 管理室
14. 教室阅览室
15. 书库
16. 计算机室
17. 咖啡厅



Main Teaching Building First Floor Plan:
1. Office
2. Lounge
3. Presentation room
4. Preparation room
5. Laboratory
6. Meeting room
7. Reception
8. Large classroom
9. Classroom
10. Computer room
11. Apartment

主教学楼二层平面图:
1. 办公室
2. 休息室
3. 演示
4. 准备室
5. 实验室
6. 会议厅
7. 接待室
8. 合班
9. 教室
10. 计算机室
11. 公寓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8. Back of the main teaching building
9. Bilingual teaching building #C
10. Slope greening
11. Main façade of bilingual building
12. School view

8. 教学主楼背面
9. 双语教学楼C座
10. 校园坡地处理
11. 双语楼主墙
12. 校园内景

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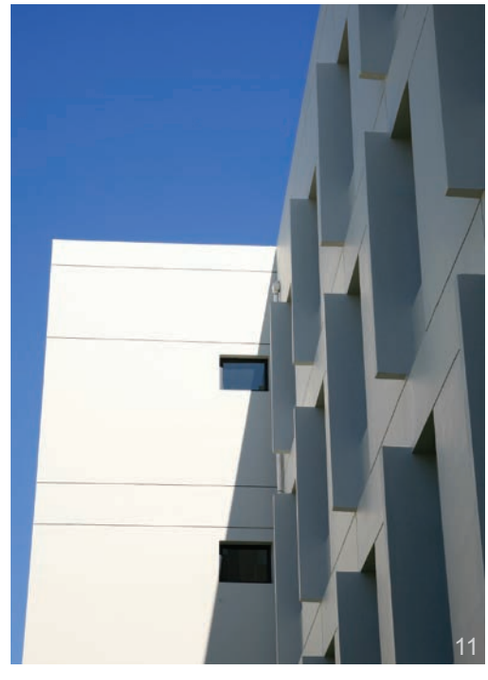

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13. Experiment building
14. School landscape
15. View of experiment building from interior
16,17. Interior of experiment building
18. Gymnasium
19. Art Centre
20. East façade

13. 实验楼
14. 校园内的植被
15. 从室内看实验楼
16,17. 实验楼内景
18. 体育馆
19. 艺术中心
20. 校园东侧街景

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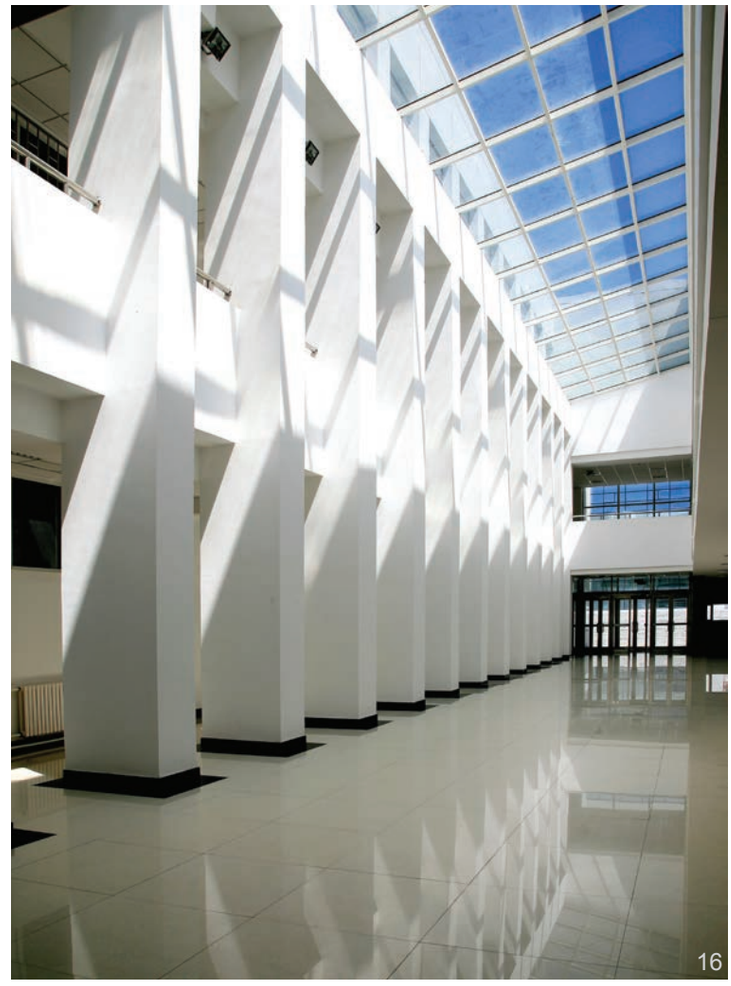

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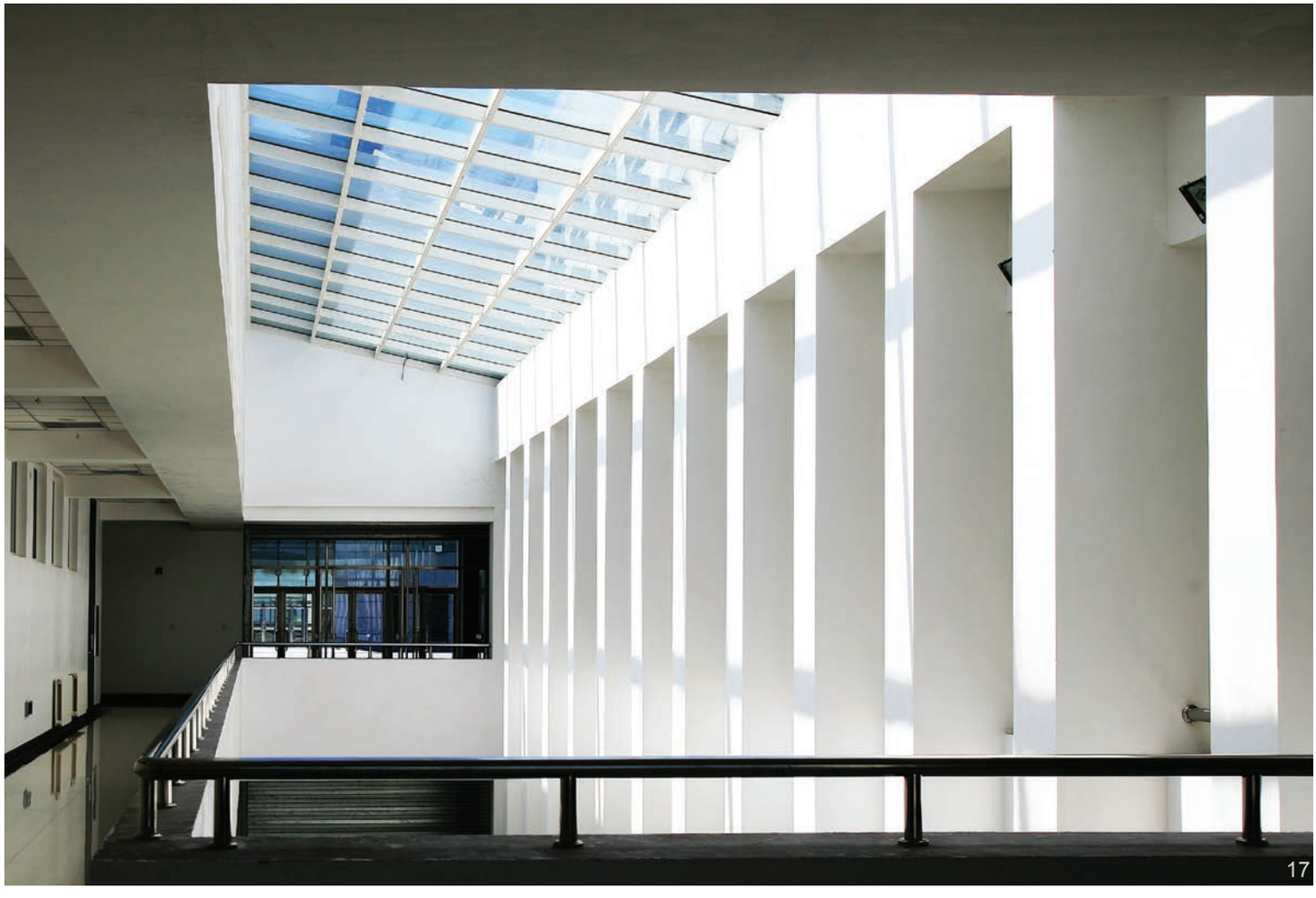

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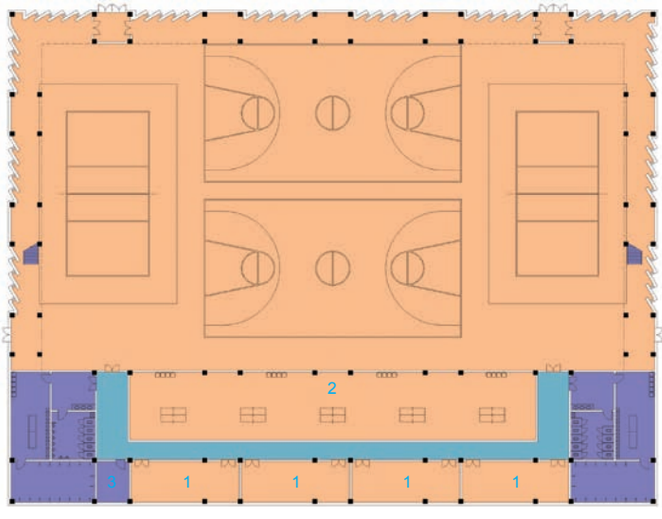
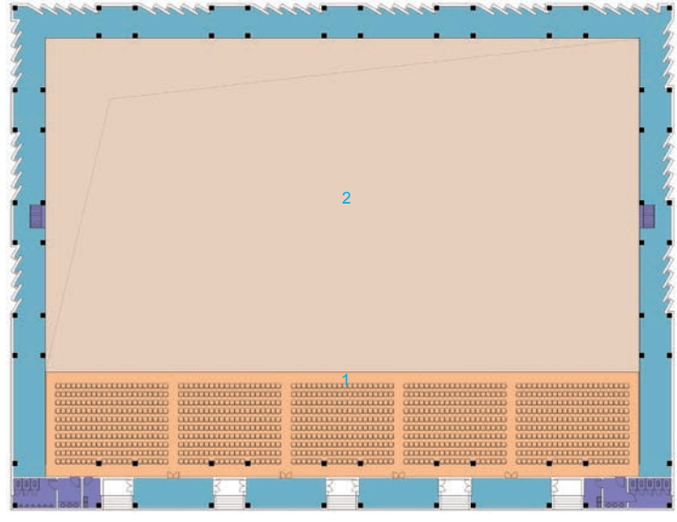
Stadium Ground Floor Plan:
1. Equipment storage
2. Ping-pang
3. Storage

体育馆一层平面图:
1. 器材库
2. 乒乓球室
3. 杂物间



Stadium First Floor Plan:
1. Auditorium with a capacity of 1,030
2. Void

体育馆二层平面图:
1. 观众席（1030人）
2. 场地上空



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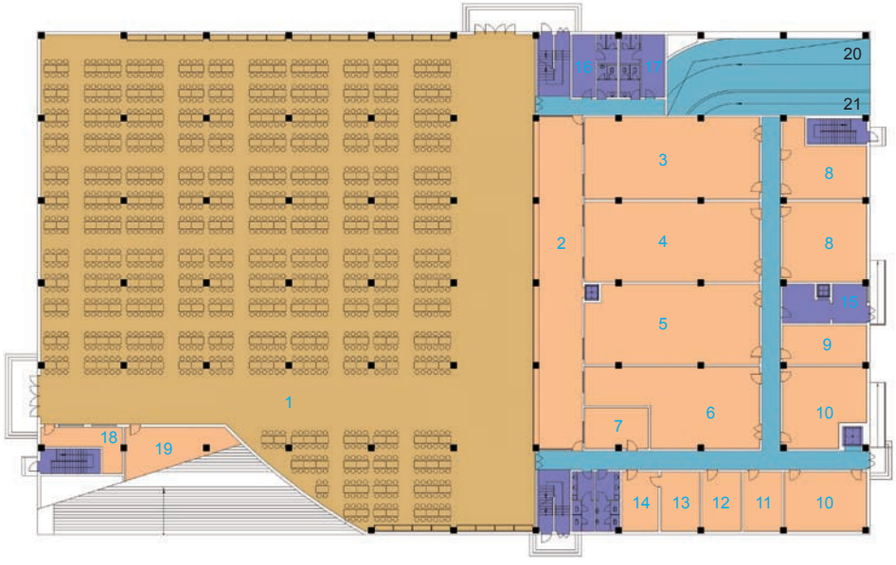
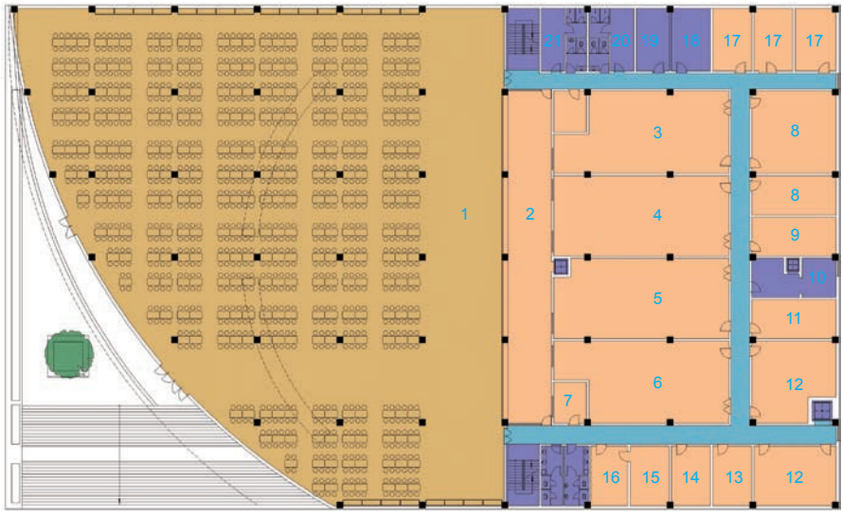


Dining Centre Ground Floor Plan:

1. Students' canteen with a capacity of 1,348
2. Preparation room
3. Pastry preparation
4. Staple food preparation
5. Subsidiary food fining-off and cooking
6. Subsidiary food preliminary preparation
7. Cooked food
8. Staple food storage
9. Cold storage
10. Subsidiary food storage
11. Drinks storage
12. Spices storage
13. Disinfection room
14. Dishwashing
15. Cleaning room
16. Female locker room and lounge
17. Male locker room and lounge
18. Card selling
19. Clearing
20. Vehicle ramp
21. Bicycle ramp

餐饮中心一层平面图：

1. 学生餐厅（1348座）
2. 备餐
3. 点心加工
4. 主食加工
5. 副食细加工及烹饪
6. 副食初加工
7. 熟食品
8. 主食库
9. 冷藏库
10. 副食库
11. 酒水及备品库
12. 调料库
13. 消毒间
14. 洗碗间
15. 清扫间/垃圾间
16. 女更衣、休息室
17. 男更衣、休息室
18. 售卡室
19. 清洁储物间
20. 机动车坡道
21. 自行车坡道



Dining Centre First Floor Plan:

1. Students' canteen with a capacity of 1,136
2. Preparation room
3. Subsidiary food preparation for the Huis
4. Staple food preparation
5. Subsidiary food fining-off and cooking
6. Subsidiary food preliminary preparation
7. Cooked food
8. Staple food storage
9. Spices storage
10. Cleaning room
11. Cold storage
12. Subsidiary food storage
13. Tableware storage
14. Drinks storage
15.Disinfection room
16. Dishwashing
17. Office
18. Male lounge
19. Female lounge
20. Female locker room
21. Male locker room

餐饮中心二层平面图：

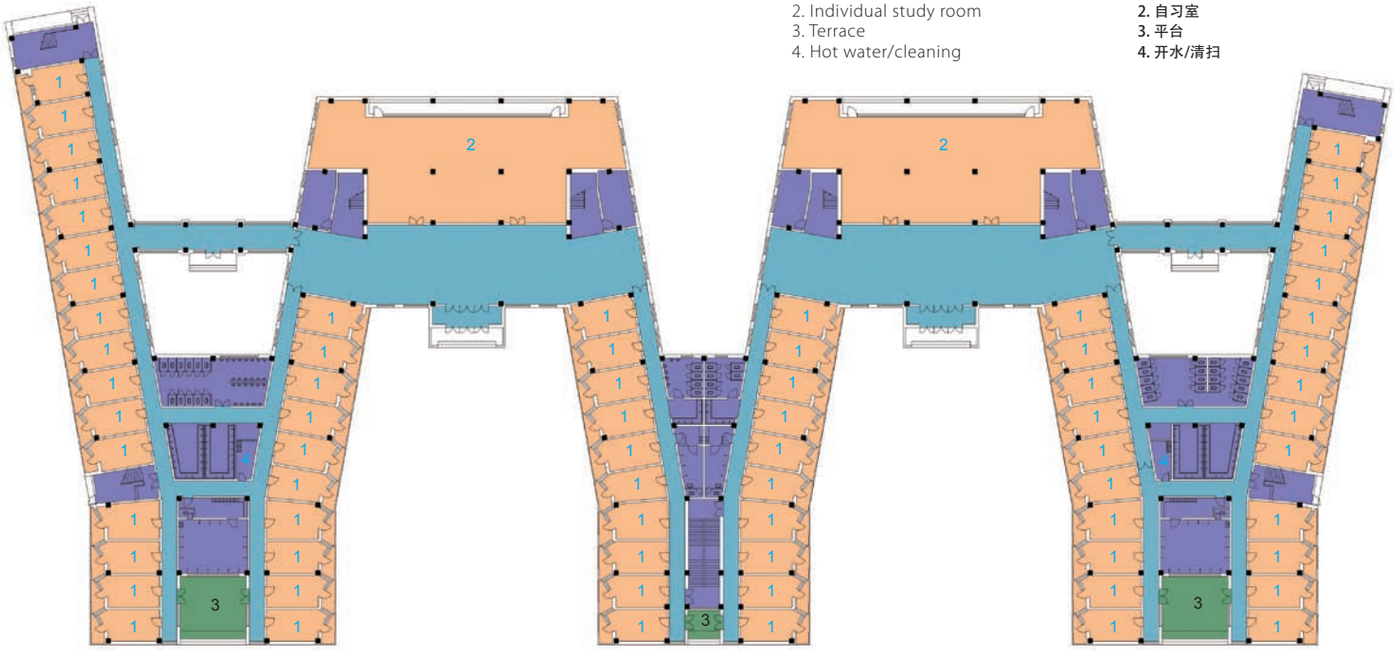
1. 学生餐厅（1136座）
2. 备餐
3. 回民副食加工
4. 主食加工
5. 副食细加工及烹饪
6. 副食初加工
7. 熟食品
8. 主食库
9. 调料库
10. 清扫间/垃圾间
11. 冷藏库
12. 副食库
13. 餐具库
14. 酒水及备品库
15. 消毒间
16. 洗碗间
17. 办公室
18. 男休息室
19. 女休息室
20. 女更衣室
21. 男更衣室

21. Surrounding landscape of student dormitory
22. Student dormitory

21. 学生公寓外景观
22. 学生公寓楼

Students Dormitory Ground Floor Plan (Gross Floor Area: 24,845m²):
1. Dorm
2. Individual study room
3. Terrace
4. Hot water/cleaning

学生宿舍一层平面图（总面积24845平方米）：
1. 宿舍
2. 自习室
3. 平台
4. 开水/清扫



WEST DISTRICT SENIOR MIDDLE SCHOOL IN BAYAN NUR

Bayan Nur, Inner Mongolia
China Architecture Design & Research Group

巴彦淖尔西区中学

巴彦淖尔 内蒙古
中国建筑设计研究院

Site Area: 113,220m²
Gross Floor Area: 75,922m²
Design/Completion Time: 2011
Architect: China Architecture Design & Research Group
Design Team: CAO Xiaoxin, SHEN Xiaolei, YU Hao
Photographer: ZHANG Guangyuan
占地面积：113220平方米
建筑面积：75922平方米
建成时间：2011年
建筑设计：中国建筑设计研究院
设计团队：曹晓昕，沈晓雷，余浩
摄影师：张广源

The project starts from criticising school architecture stereotypes. Slab-type architecture used to be conventional buildings for schools in China. At present, national regulations on primary and middle school design and administration put emphasis on basic functions of school, especially on teaching. As for other programmes apart from teaching, there is no particular demand. However, traditional stereotypes have dominated school design, resulting in the ignorance of human experience and multi-functional spaces.

Site Plan:
1. Main entrance
2. Front plaza
3. Office Building
4. Library
5. School History Pavilion
6. Group Activity Building
7. Conference Office Building
8. Conference Building
9. Canteen
10. Gymnasium
11. Tennis court
12. Sports field
13. Basketball court
14. Teaching Building #1
15. Teaching Building #2
16. Teaching Building #3
17. Laboratory #1
18. Laboratory #2
19. Male students dormitory #1
20. Male students dormitory #2
21. Male students dormitory #3
22. Bathroom
23. Hot water
24. Vestibule built on stilts
25. Female students dormitory #1
26. Female students dormitory #2
27. Female students dormitory #3
28. Teachers dormitory

总平面图：
1. 主入口
2. 前广场
3. 办公楼
4. 图书馆
5. 校史馆
6. 社团活动
7. 会议办公
8. 会议
9. 食堂
10. 体育馆
11. 网球场
12. 体育场
13. 篮球场
14. 教学楼1
15. 教学楼2
16. 教学楼3
17. 实验楼1
18. 实验楼2
19. 男生宿舍1
20. 男生宿舍2
21. 男生宿舍3
22. 浴室
23. 开水房
24. 架空连廊
25. 女生宿舍1
26. 女生宿舍2
27. 女生宿舍3
28. 教师宿舍

2

In this project, the architects attached great importance to the teaching building, trying to find a new approach. After a research on teaching functions, they set five independent yet interrelated sections: three sections for grade one, two and three respectively, lab section, and public teaching function. Furthermore, they designed five courtyards according to five kinds of behaviours, including meditation courtyard, wander courtyard, appreciation courtyard and performance courtyard. Through deformation of simple rectangular courts, the architects enriched the five kinds of school life in a spatial and montage approach.

The teaching building was built on stilts on the ground floor in order to leave the outside space open and fluid. In this way, areas on the ground floor are connected, giving more freedom for wander.

Good architecture is like good movies – they are composed of many memorable fragments. The design of the middle school, particularly the five courtyards in the teaching building, as an attempt to find new approaches to school design, aims to leave beautiful memories for its users – beautiful stories that happened in the various spaces.

对空间的批判是本项目设计的起点：板式教学楼和宿舍是过去一个时代的产物，国内现行的中小学设计规范和办学模式更多强调保障性内容和教学功能的完整性，对学校在非教学功能上的需求没有明确要求，而原本很重要的人的感受和丰富空间的必要性，几乎已经被很多人完全忘记了。

在这个项目中，建筑师把巴彦淖尔市高级中学教学楼的设计放在重点，试图在现有模式下进行一些积极而有意义的尝试。通过功能分析形成了高一、高二、高三、生化试验和其他公共教学五个相对独立又互相连通的教学组团，在此基础上，又通过五种人的行为方式构思出五个院落——冥想的院落、游走的院落、审视的院落、观演的院落等等。通过将一个简单的方形内庭院空间同构变形的方法，用建筑的空间感和蒙太奇手法去丰富并强化这五个校园生活的概念。

为了让校园的室外空间拥有更多的开放性和场所感，设计师让建筑物首层的部分架空，空间在底层相互连通，给人更多的游走可能。

好建筑和好电影一样，都是由一个个动人心弦的记忆片段组成的。该项目（尤其是教学楼五个庭院）作为一次积极的尝试，希望能给使用者提供一些各式各样的空间，并带来一些值得回忆的美好时光。

1. Entrance
2. Panoramic view of the main building

1. 学校入口
2. 主楼全景

A. Programmes Topology:
1. Sports
2. Dormitory
3. Canteen
4. Library and office
5. Front plaza
6. Teaching

A. 学校功能流线拓扑关系:
1. 运动区
2. 宿舍区
3. 食堂
4. 图书馆及办公室
5. 校前广场
6. 教学区

B. Direction and Daylight: South Facing for Maximum Daylight

B. 建筑朝向及日照: 建筑南向最大化

C. Area Allocation:
1. Gymnasium: 4,000
2. Dormitory: 22,000
3. Canteen: 4,000
4. Library: 5,800; Office: 5,000
5. Teaching: 29,000

C. 建筑面积的分配:
1. 体育馆0.4万
2. 宿舍2.2万
3. 食堂0.4万
4. 图书馆0.58万 办公0.5万
5. 教学2.9万

D. Roads: Surrounding Roads

D. 基地及周边道路: 周边道路的情况

E.Entrance and Vehicle Circulation
1. Entrance
2. Main entrance

E. 入口及主要车行流线:
1. 入口
2. 主入口

F. Relationship among Zones:
1. Sports
2. Dormitory
3. Public service
4. Teaching

F. 分区与相互间关系:
1. 运动区
2. 宿舍区
3. 公共服务区
4. 教学区

G. Greenery and Landscape:
Surrounding greenery
1. Urban public greenery
2. Green belts

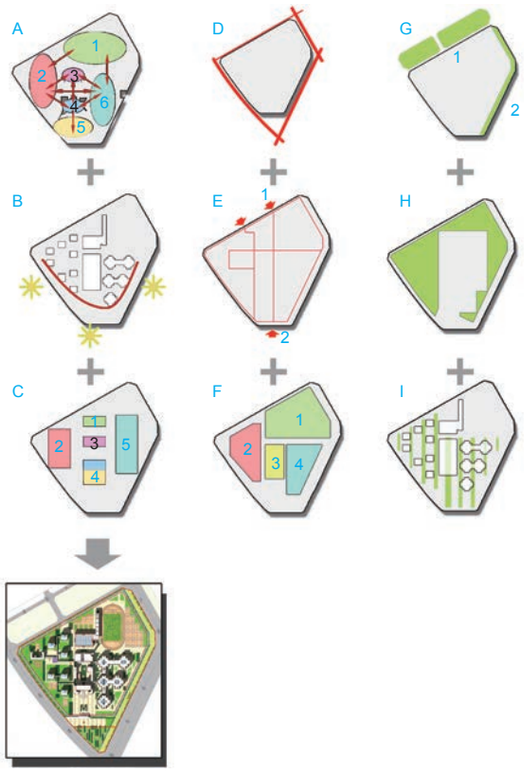
G. 绿化与景观:
周围绿化的情况
1.城市公共绿地
2. 绿化隔离带

H. Green Area within Site: Green Area and Sports Field

H. 对应基地内绿化范围: 绿化及运动场地

I. Greenery and Architecture Integrated: Greenery between Buildings

I. 绿化与建筑相互围合: 楼间绿化



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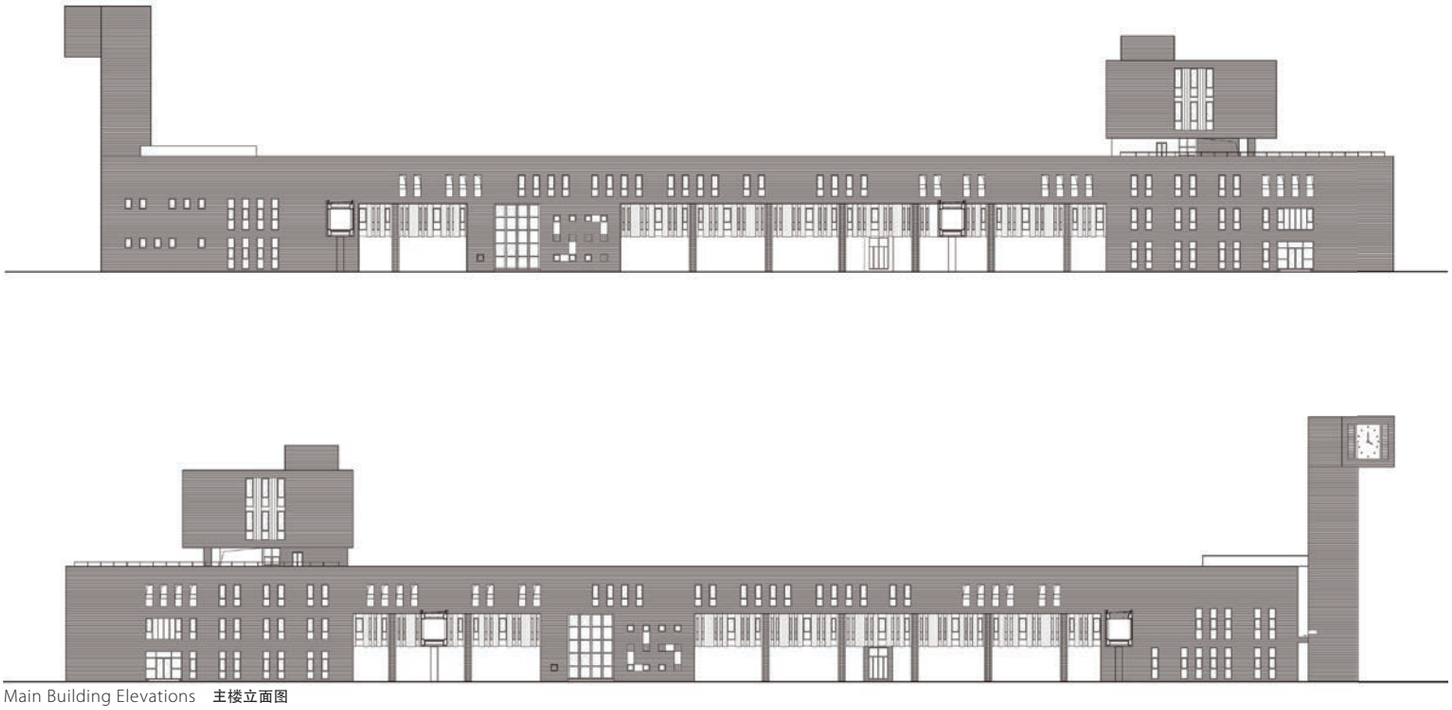
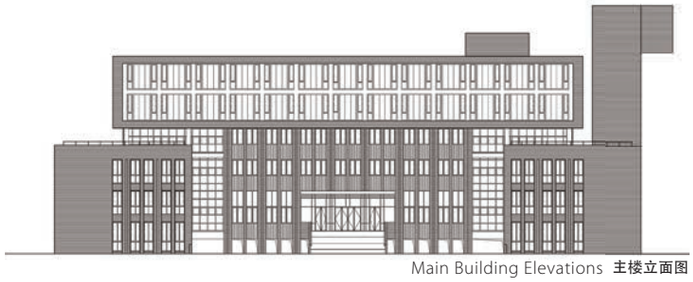
3. Aerial view of the main building
4. Main building plaza
5. A glimpse of the plaza
3. 主楼俯瞰图
4. 主楼广场
5. 广场一角



Main Building Elevations **主楼立面图**



Main Building Elevations **主楼立面图**

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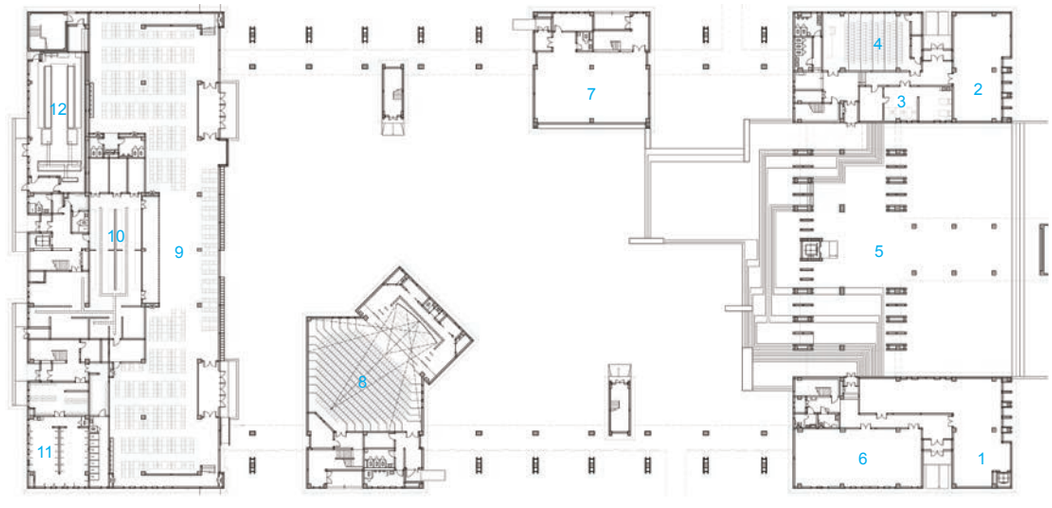
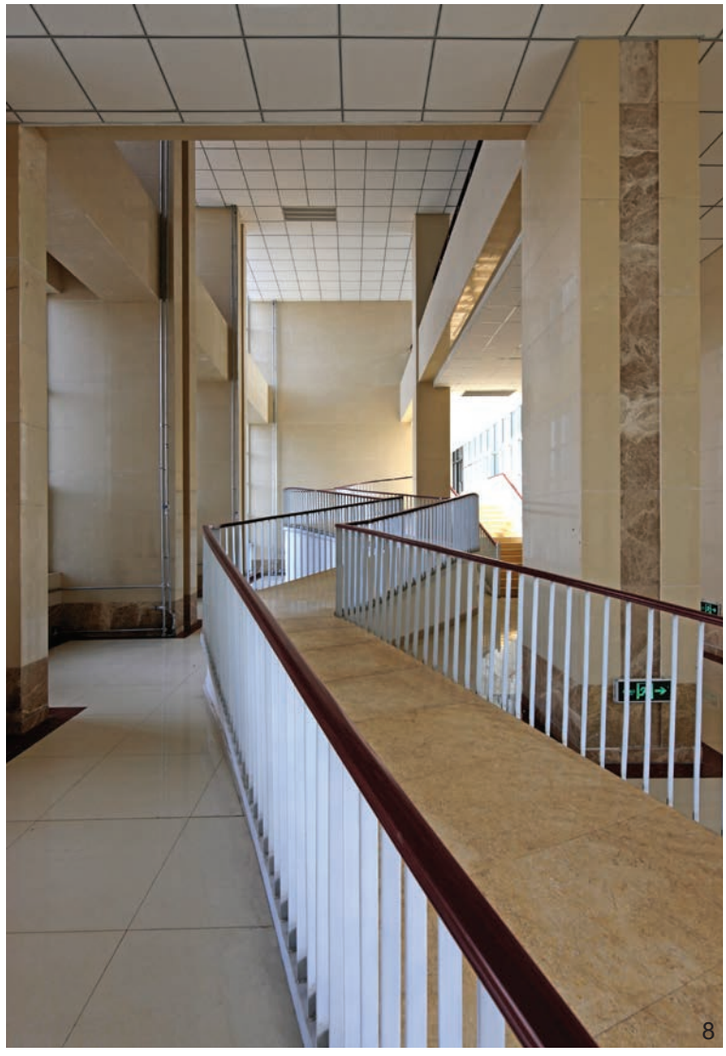
6. Close-up of main building
7. Bell tower
8. Corridor
6. 主楼特写
7. 钟楼
8. 走廊



Main Building
Ground Floor Plan:
1. Book storage
2. Archives
3. Infirmary
4. Conference room
5. Hall
6. Distance learning classroom
7. School supermarket
8. Conference room (projection)
9. Dining area
10. Kitchen
11. Male bathroom
12. Electric room

主楼
一层平面图：
1. 基本书库
2. 档案室
3. 医务室
4. 大会议室
5. 大厅
6. 远程教育教室
7. 校园超市
8. 大会议室（放映厅）
9. 就餐区
10. 厨房区
11. 男浴室
12. 交配电室

7



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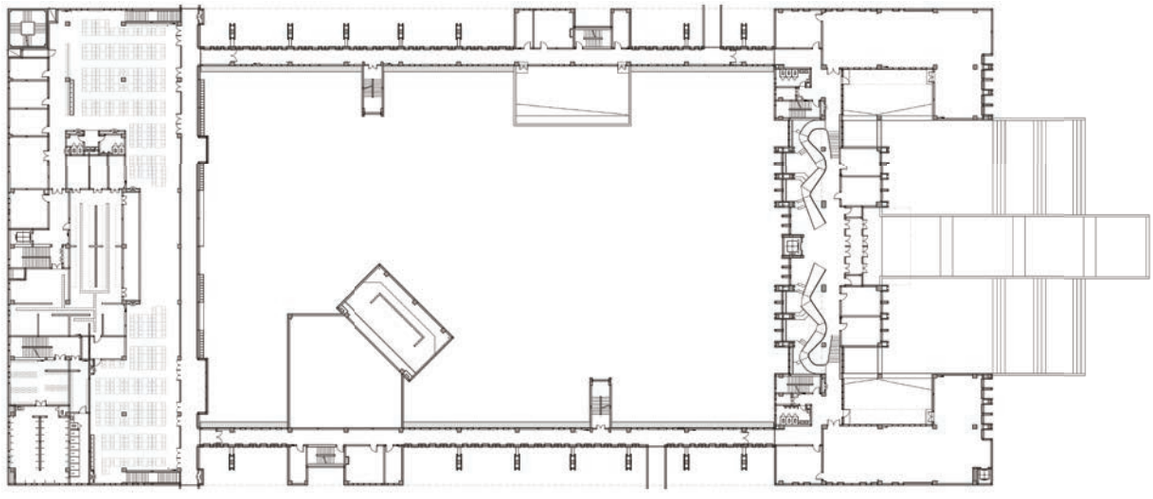
Main Building First Floor Plan
主楼二层平面图



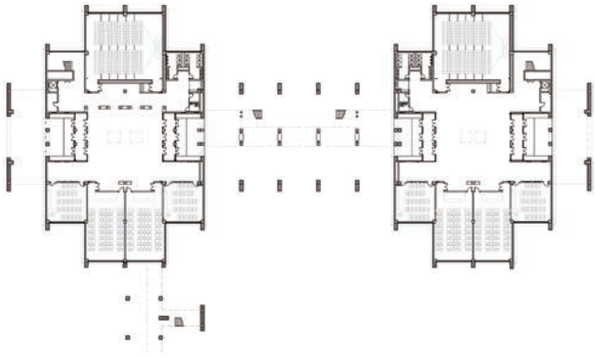
9. Teaching building
10. Teaching building landscape
11. Staircase landing
9. 教学楼
10. 教学楼景观
11. 缓步台

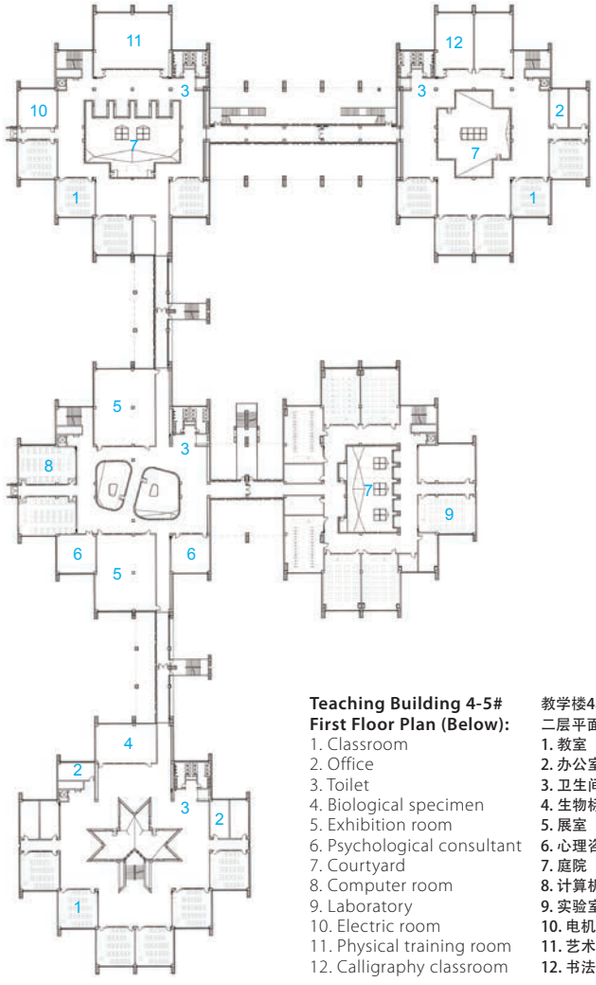
Teaching Building North Elevation 教学楼北立面图

Teaching Building East Elevation 教学楼东立面图

Teaching Building Section 教学楼剖面图

Teaching Building 4-5# Ground Floor Plan
教学楼4、5号一层平面图





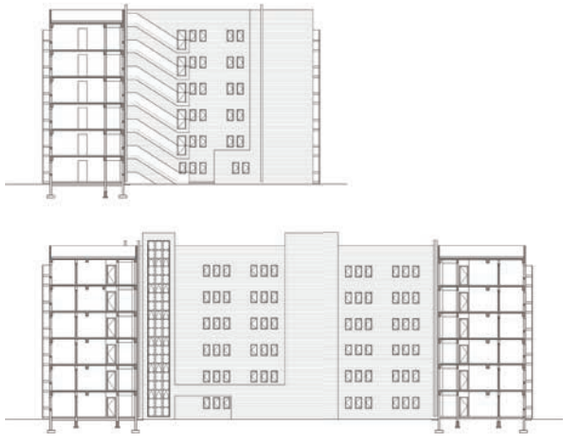
Teaching Building 4-5#
First Floor Plan (Below):
1. Classroom
2. Office
3. Toilet
4. Biological specimen
5. Exhibition room
6. Psychological consultant
7. Courtyard
8. Computer room
9. Laboratory
10. Electric room
11. Physical training room
12. Calligraphy classroom

教学楼4、5号
二层平面图（下图）：
1. 教室
2. 办公室
3. 卫生间
4. 生物标本室
5. 展室
6. 心理咨询室
7. 庭院
8. 计算机
9. 实验室
10. 电机房
11. 艺术形体室
12. 书法教室

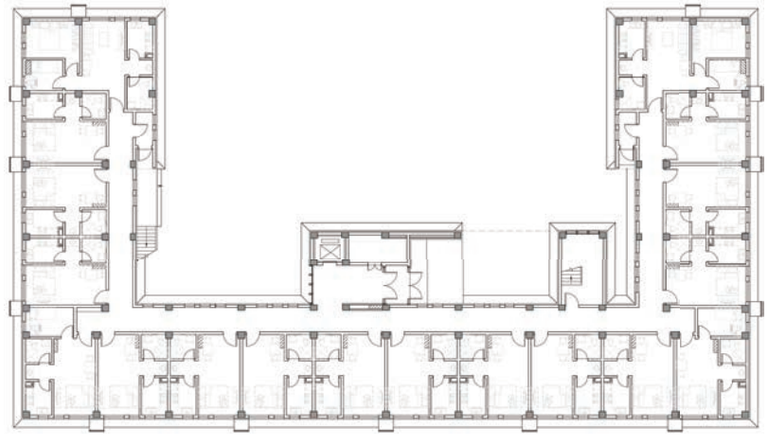

10


11

12. Dormitory buildings surrounded with landscape
13. Perspective of dormitory buildings
12. 宿舍楼广场景观
13. 宿舍楼远景



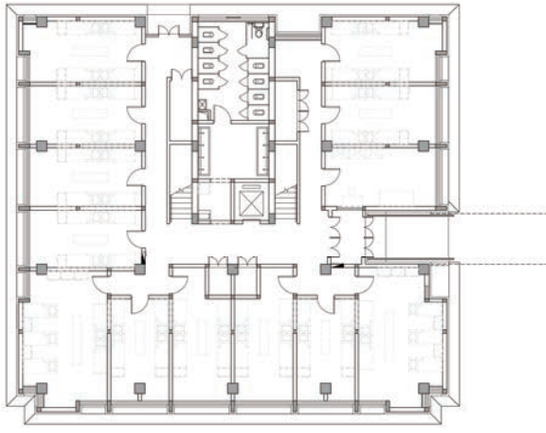
Teachers' Dormitory Sections 教师宿舍剖面图



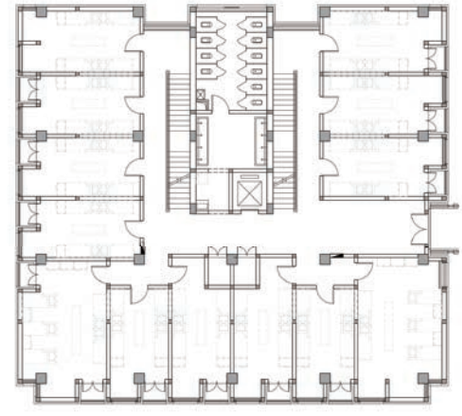
Teachers' Dormitory Ground Floor Plan 教师宿舍一层平面图

Dormitory Elevations
宿舍立面图

Dormitory Section
宿舍剖面图



Students' Dormitory Ground Floor Plan　学生宿舍一层平面图



Students' Dormitory First Floor Plan　学生宿舍二层平面图

PRIMARY SCHOOL AT C09 PLOT, SOUTHSTAR COMMUNITY, QIANJIANG NEW TOWN

Hangzhou, Zhejiang Province
Beijing Institute of Architectural Design (BIAD)

钱江新城南星单元C-9地块配套小学

浙江省 杭州市 钱江新城
北京市建筑设计研究院

Site Area: 17,346m²
Gross Floor Area: 18,436m²
Design/Completion Time: 2007-2009/2009
Architect: Beijing Institute of Architectural Design (BIAD)
Design Team: LI Chengde, WANG Shuzhan, SUN Xiaoming, YUAN Lipu, ZHENG Zhenzhen, LIU Rong, HAN Zhaoqiang, ZENG Yuan, SHEN Jie, LI Zhenyu
Photographer: YANG Chaoying
用地面积：17346平方米
建筑面积：18436平方米
设计/建成时间：2007-2009年/2009年
建筑设计：北京市建筑设计研究院
设计团队：李承德，王舒展，孙小明，袁立朴，郑珍珍，刘容，韩兆强，曾源，沈洁，李震宇
摄影师：杨超英

The project of this primary school at C09 Plot, SouthStar Community, Qianjiang New Town is mainly challenged by two disadvantageous site conditions: a limited site area and a slanting lot. The architects from BIAD found an appropriate solution, successfully arranging programmes such as the main teaching building, a sports field, and an art centre in a clear plan, creating easy circulation in both interior and exterior.

Space
Unlike traditional primary schools which only have the basic school functions and no more, the design of this primary school particularly made some exploration about "space". Since Hangzhou has a humid and hot climate, the architects created many semi-outdoor circulation spaces that are good at rain-proofing and ventilation. Green inner courtyards and open verandas are interconnected to organise main programmes. In this way, natural lighting and ventilation is achieved, making the architecture open and transparent. The courtyards resemble traditional Chinese gardens, which not only provide ever-changing sceneries but also reveal a strong oriental feature. Meanwhile, children are given more chances to be close to nature, and thus freed from overprotection in the teaching building.

The colonnade, main entrance, vestibule, school culture hall, arc staircase, main corridor, and training centre constitute the main axis of the teaching building, organising the different programmes in good order. These spaces perfectly reveal the aesthetics of order in traditional Chinese architecture. Moreover, typical Chinese patterns and icons appear in the interiors; in the colonnade the column bases are derived from Chinese drum-shaped bearing stone; Chinese traditional lattice is used extensively in both interior and exterior; Chinese flowering crabapple pattern is adopted in the school culture hall. All in all, the architects tried to incorporate Chinese imagery into the architecture in a contemporary way, drawing students closer to traditional Chinese culture in their daily life.

Various spaces are created for children who, apart from routine classrooms, can enjoy an interesting school life. The ceremonial school culture hall looks dignified and somber; the zigzagging corridor beside the classrooms is intimate and welcoming; the 6-metre-wide porch before the classroom is bright and open; the roof terrace is good for playing, exposing to or taking shelter from the rain; the veranda at the perimeter of the atrium is playful and interesting; the green inner courtyards are quiet and cosy. The various space types provide children with multiple opportunities for beautiful stories and a memorable childhood.

Construction
With an extremely limited budget, the architecture is austere in material, both interior and exterior. However, following the principle of "raw material, delicate detail", the architects successfully improved the quality of construction.

Grey bricks were selected for the façade to give out a hint of traditional architecture, but were adopted in a new way. The bricks were layered with a 45-degree angle, differing from conventional horizontal brick construction. The special pattern formed on the façade enlivens the atmosphere of the school. Dark, intermediate, and light grey bricks are constructed with a proportion of 7:2:1. Dark grey is the basic tone, while the other two become lively elements on the façade.

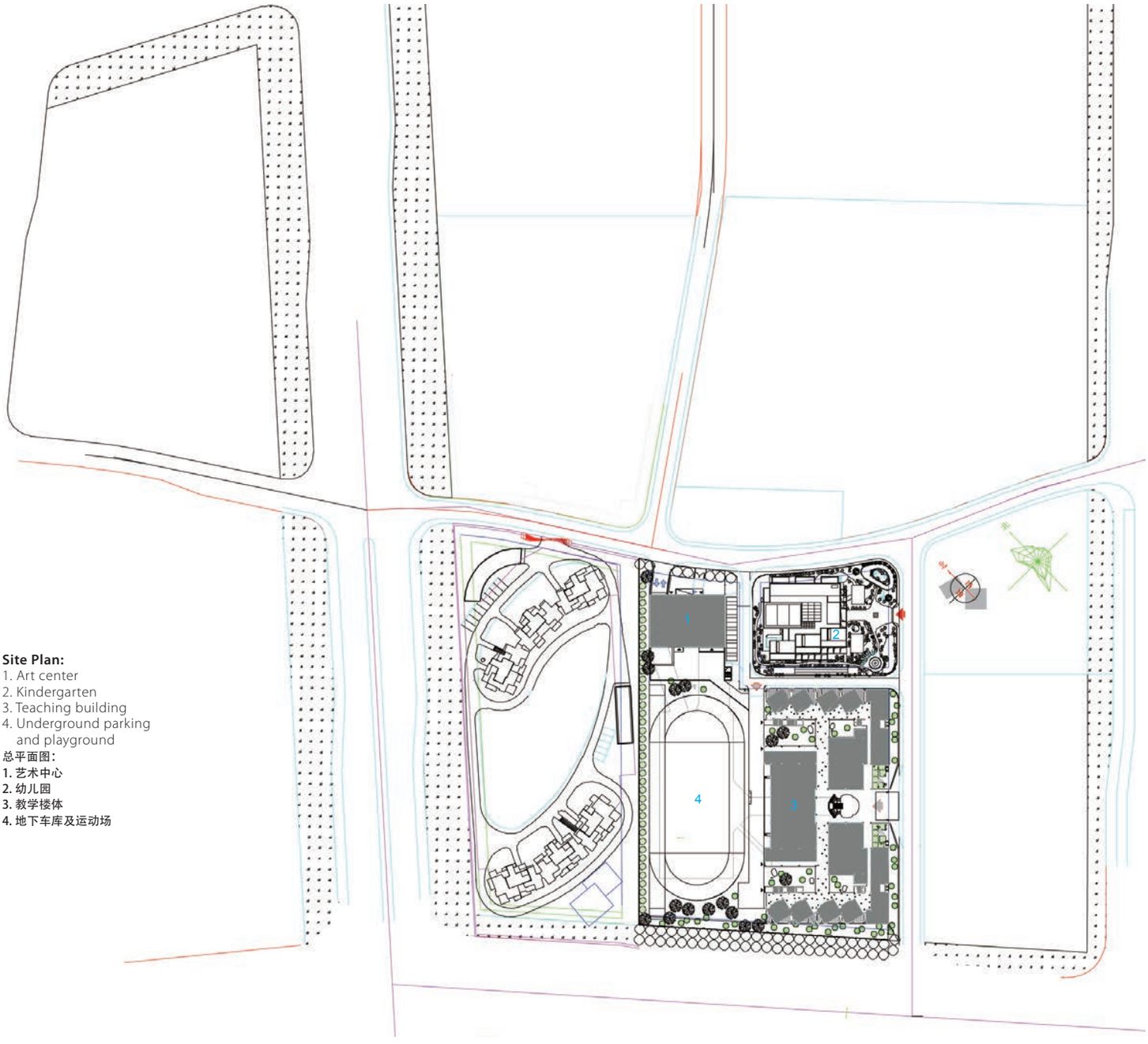
Traditional lattice is used throughout the building as a symbol of Chinese architecture, for example, in the main entrance curtain wall, the open

suspended ceiling, and openings on the ceiling and side walls. The lattice in wood colour, together with the light yellow-painted ceiling, contrasts with the grey façade, creating an atmosphere full of Chinese flavour while highlighting the warm texture of the building.

Columns and railings are constructed with the technique called "concrete chip-axe". Compared with real stone paving, this traditional technique creates a similar effect; it is cost-effective, and brings out the aesthetics of simplicity. Moreover, it is more flexible in nodes and articulation details.

The principle of "raw material, delicate detail" is a direct challenge to the currently popular mode of "luxury material, raw craftsmanship". Many delicate construction techniques in Chinese ancient architecture have been lost in the process of rapid development of the country. In this project, it was difficult to carry out such a principle for the deficiency of constructors' skills, the time limit… Nonetheless, at present when budget for educational projects is still low, it is an efficient way to improve architectural quality.

The architectural design for this primary school breaks the stereotype of educational architecture (plain spaces, atmosphere all in the same key, lack of delicate details…). Currently the country is promoting transformation in fundamental education, and this project is just a good example of transformation, in the perspective of architecture.



Site Plan:
1. Art center
2. Kindergarten
3. Teaching building
4. Underground parking and playground

总平面图：
1. 艺术中心
2. 幼儿园
3. 教学楼体
4. 地下车库及运动场

5

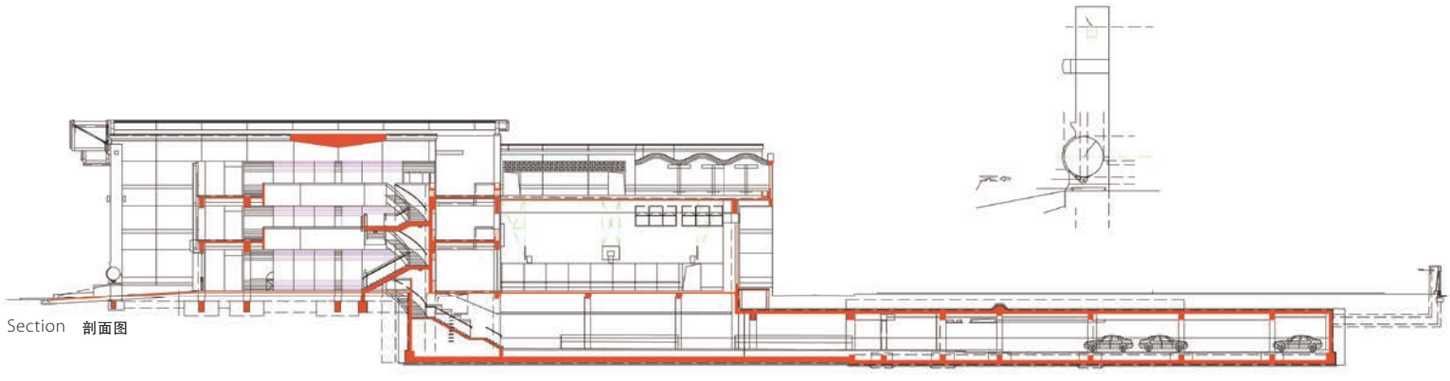
钱江新城南星单元C-9地块小学的建筑设计，在项目用地面积狭促、方向偏转的不利条件下，采用巧妙的布局方式，恰当、妥帖地安排了教学主楼、运动场地、艺术中心等多项功能，使得学校外部交通明确而流畅，内部功能流线舒适而紧密。

空间

区别于仅满足功能基本要求的一般性学校建筑，钱江新城南星单元小学的设计对“空间”的塑造做出了深入探索：结合杭州湿热的气候特征，设计运用了大量“遮雨而透风”的半室外的公共交通空间。在主要功能用房的组织与衔接中，绿色内庭院与开敞外廊的咬合穿插，在大大改善采光通风的同时，使建筑获得了“通、透”之感，远近空间相互渗透，步移景异，具有鲜明的地方特色；教学楼中的孩子们获得了更多的接近阳光风雨的机会，更多的生活于自然的机会，从被过度保护的环境中解放出来。

由教学主楼前柱廊、格栅正门、等待前厅、校园文化大厅、弧形楼梯、通廊、综合训练馆一系列空间所形成的建筑主轴线，将教学主楼各主要部分凝结成为层次丰富、秩序明确的整体。在这一轴线上，空间高低扬抑、收放开合、次第推进，传达出一种浓厚的中国古典空间的意韵。空间设计中多处辅以中国建筑文化的传统纹样与符号，由抱鼓石转译而来的柱础坐落于门前列柱、由“万字符”与“步步锦”结合而成的格栅贯穿于建筑内外抑或传统海棠纹样为文化大厅的中庭塑形，设计师始终力求将中国传统文化的记忆，以现代设计手法融入建筑之中，融入到孩子们的每日生活。在建筑获得高贵的精神气质的同时，将传统文化的种子植入孩子们的心灵。环境对于人的文化修养的熏染，在每天的生活中展开，潜移默化，润物无声。

对“空间”的着意塑造，为孩子们提供了大量“教室之外”的有特色有趣味的“角落”与“场所”。校园文化大厅富于仪式感的高大庄重、教室旁折边走廊的亲切近人、专业教室前6米宽的走廊的宽畅通达、游戏屋顶可玩可赏可淋雨也可避雨的童趣盎然、中庭围廊的盘旋多姿、绿化内院的舒适静谧，丰富多样的空间类型，为孩子们创造性的生活提供了多种可能，酝酿着美好的生活故事，培育着热爱生活的童心。



Section 剖面图

6

构造

在学校建筑投资极为有限的条件下，建筑室内外用材均较为朴素，采用“粗材细做”的方式，提升建筑的品质。

墙面灰砖的选择，隐喻了传统与地方的建筑特色，但采用了全新的使用方式。45度的斜拼，打破了以往面砖模拟砌体砖墙水平砌筑的惯常做法，形成了特殊的更加生动的表面肌理，一方面响应小学校园轻松活泼的氛围，另一方面暗合了面砖材料自身的图案拼贴本质。深、中、浅三色灰砖按照“七、二、一”的分配比例拼合，在深灰所形成的统一色调中，两个层次的浅色灰砖，成为墙面上活泼跳跃的元素。

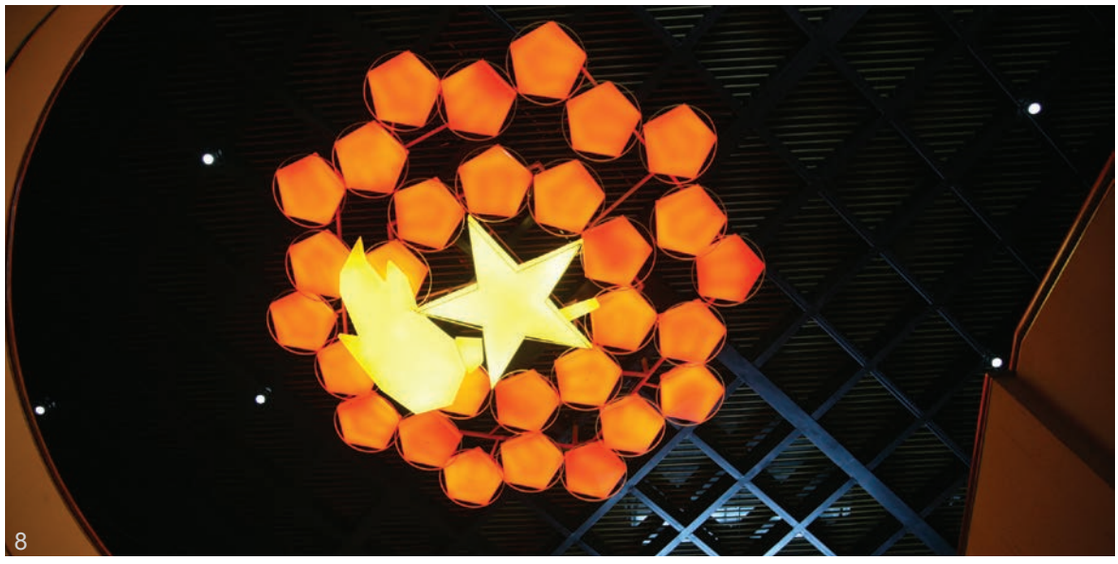
传统韵味的仿木格栅，应用于主入口幕墙、开放式吊顶、屋顶侧墙漏窗等多处，成为贯穿建筑始终的标志性符号。木色格栅结合鹅黄色的吊顶喷涂所形成的暖色，与建筑外墙的灰色形成了柔和的对比，在形成浓厚的传统意味的同时，赋予建筑温暖的质感。

水泥剁斧工艺，用于列柱及栏板。较之真正的石材铺贴，这种仿石面效果的传统工艺，既节约了大量成本，又传达了朴素自然之美，并在具体的节点形式处理和交接上，具有更大的可塑性和自由度。

“粗材细做”的构造方式对当前普遍存在的“用材昂贵而做工粗糙”提出了挑战。我国传统施工工艺中的精致部分正在高速大量的建造中消解失传。“粗材细做”也在施工中遭遇到工人技能、工期等困难，但在当前教育建筑投资普遍低下的情况下，仍是一种有效提高建筑品质的方式。

钱江新城南星单元C-9地块小学的建筑设计，改变了以往教育建筑常常出现的空间平板、意境苍白、细部缺失的状况。在物质生活充裕的今天，这一设计更加强调了建筑的气质内涵与精神教化作用，在当今基础教育逐步转型的过程中起到了良好的助推作用。

7

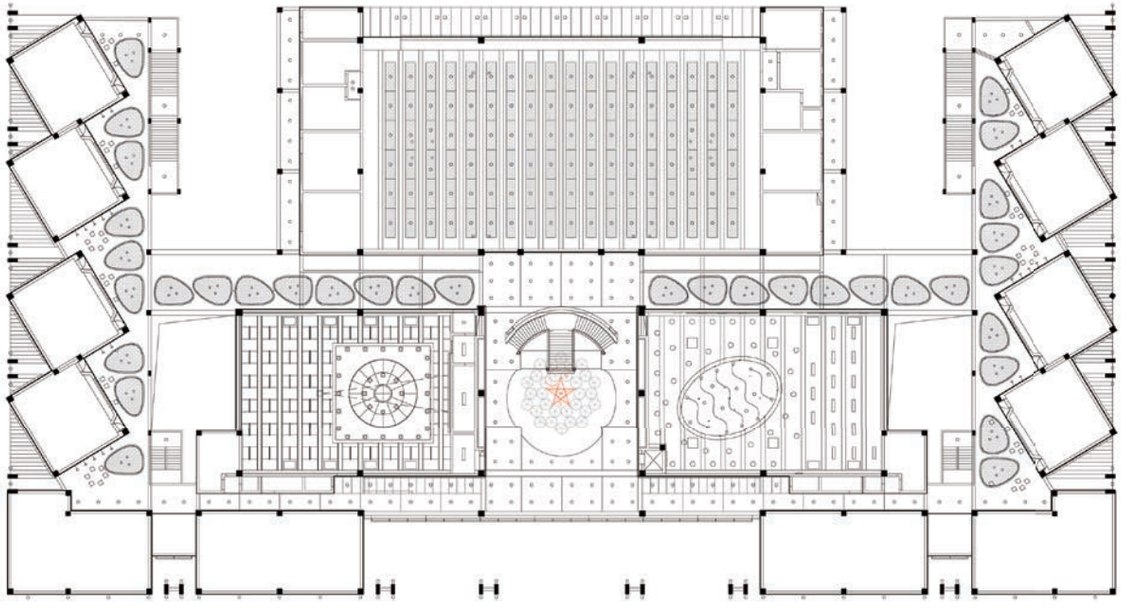


8

9

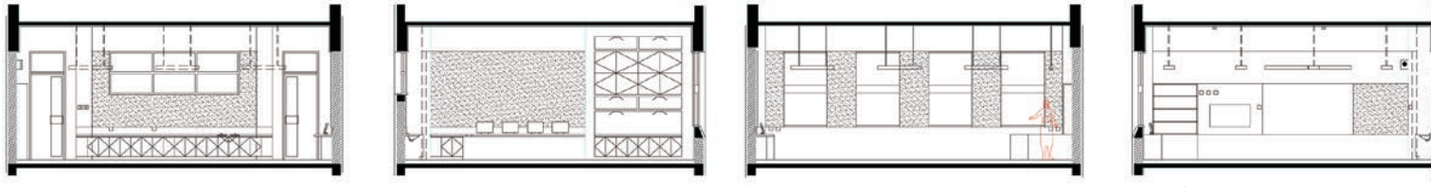
1. Façade close-up view
2. Main façade
3. Façade detail
4. School entrance
5. Teaching building view from playground
6. Inner courtyard
7. Staircase
8. Special light: Sparkling Star
9. Lobby
10. Typical classroom

1. 外立面细节
2. 主立面
3. 立面细节
4. 校门的细节
5. 从操场望向教学楼
6. 内庭院
7. 楼梯
8. 星星火炬灯饰
9. 大厅
10. 标准教室

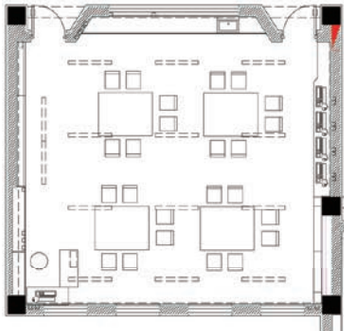


Outdoor Ceiling Plan with Lights
室外顶篷及布灯平面图

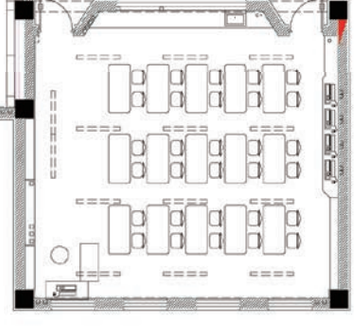
10



Classroom Sections 普通教室剖面图



Classroom for Grade 1 & 2
with Ground Seating
一、二年级教室（小组式座椅排布）



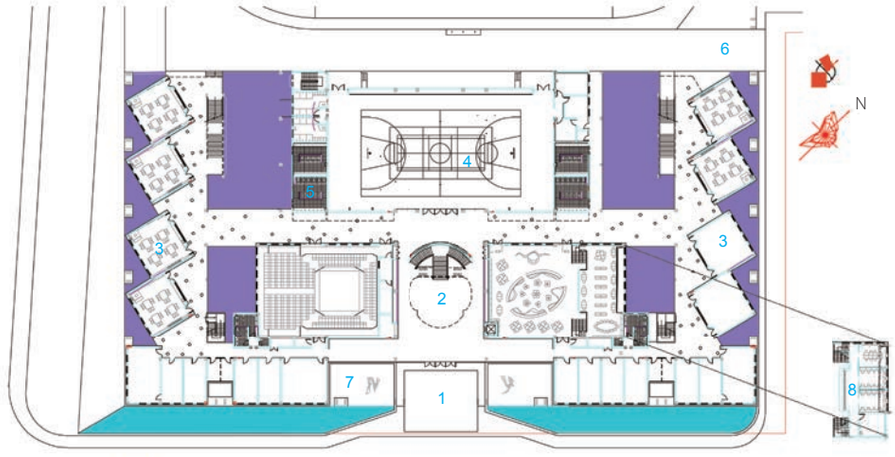
Classroom for Grade 3 to 6
with Typical Seating
三至六年级教室（秧田式座椅排布）

11

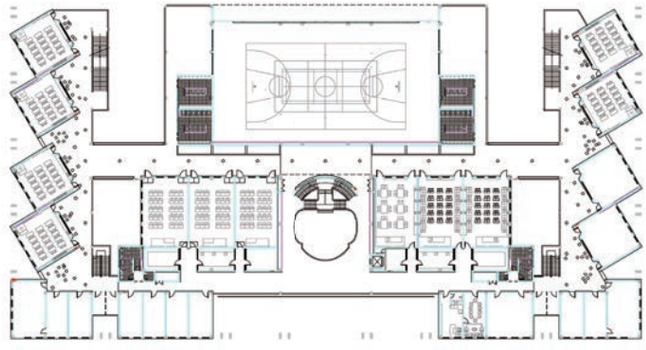
12

Ground Floor Plan (Right):
1. Main Entrance
2. Lobby
3. Office
4. Multi-functional training hall
5. Restroom
6. Secondary entrance
7. Courtyard sculpture
8. Library mezzanine floor

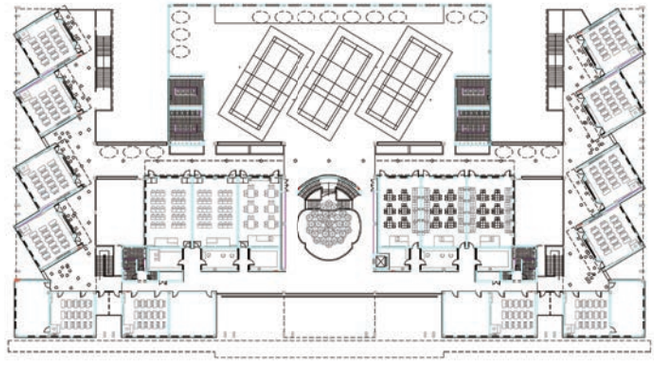
一层平面图（右图）：
1. 主入口
2. 大厅
3. 办公室
4. 多功能训练厅
5. 洗手间
6. 次入口
7. 庭院雕塑
8. 图书馆夹层平面



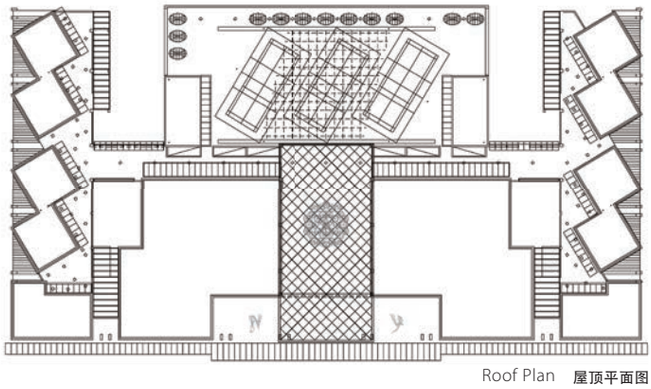
Lawn 草坡
Greenery 绿化



First Floor Plan 二层平面图



Second Floor Plan 三层平面图



Roof Plan 屋顶平面图

11. Lecture hall
12. Multi-functional training hall

11. 合班观摩阶梯教室
12. 多功能训练厅

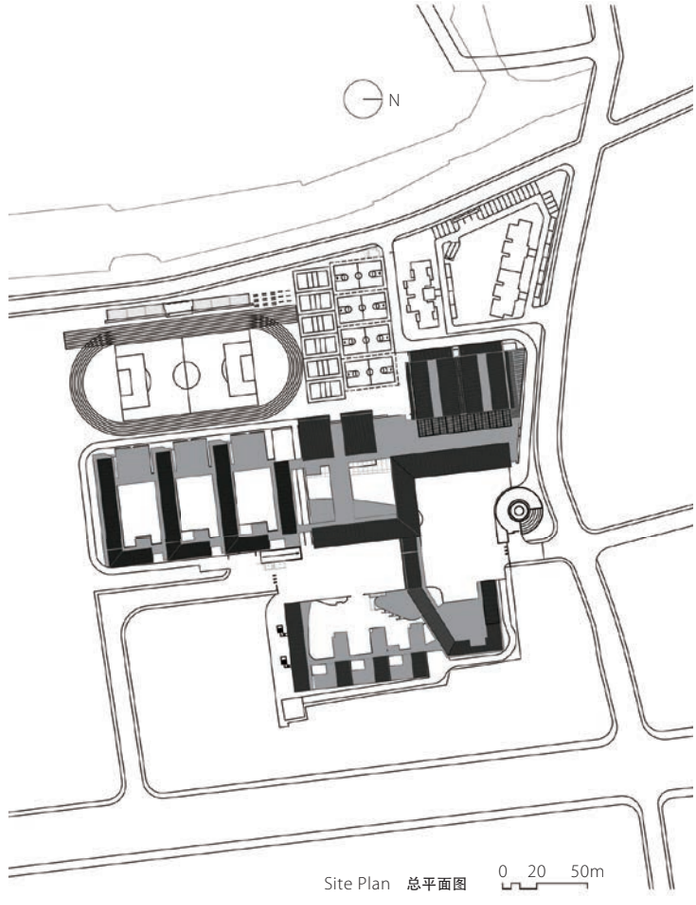
EXPERIMENTAL PRIMARY SCHOOL & KINDERGARTEN, SUZHOU
Suzhou, Jiangsu Province
9-Town Design Studio for Urban Architecture, Shanghai

苏州实验小学及附属幼儿园
江苏省 苏州市
上海九城都市建筑设计顾问有限公司

Site Area: 52,170m²
Gross Floor Area: 64,165m²
Design/Completion Time: 2008/2010
Architect: 9-Town Design Studio for Urban Architecture, Shanghai
Design Team: YU Lei, HUANG Zhiqiang, XU Tian,
LI Lingyun, DENG Hongfeng, WANG Xiao, GUO Xing, QIN Feng
Collaborator: 9-Town Design Studio for Urban Architecture, Suzhou
Photographer: YAO Li
Client: Experimental Primary School, Suzhou
占地面积：52170平方米
建筑面积：64165平方米
设计/建成时间：2008年/2010年
建筑设计：上海九城都市建筑设计顾问有限公司
设计团队：于雷，黄志强，许天，
李凌云，邓宏峰，王啸，郭兴，秦峰
施工图设计：苏州九城都市建筑设计有限公司
摄影师：姚力
业主：苏州市实验小学

The Experimental Primary School, Suzhou has a history of 100 years. In 2008 due to the redevelopment of the old town, the City Government decided to relocate the primary school and its affiliated kindergarten. Construction on the new site is scheduled to accommodate 60 classes for the primary school and 18 classes for the kindergarten. Because the site is located at the urban centre, the architects are confronted with a series of problems: the limitation of site area, a high demand for floor area, the lack of event and green spaces, etc.

With the above-mentioned problems in mind, the architects designed the new school architecture as a complex, with different programme spaces united by a linking system. In this way, spaces both above and under ground are fully utilised, and different rooms, event spaces and circulation are three-dimensionally organised. The new school complex is an integral architecture with several sections including – sequentially from the north entrance – administration and public section, tutoring section and teaching section. Buildings of the three sections form several courtyards in a systematic "six horizontal plus three vertical cross-line" structure. The buildings were built on stilts as much as possible, leaving the ground floor as linking joints between courtyards in the tutoring and teaching section. In this way, the linking courtyards become the main axis of the public space in the school while tops of the classrooms on the lower floors become mid-air playgrounds which are connected with main roads. The intensification of space utility solves the conflict between the limited site and lack of event space.

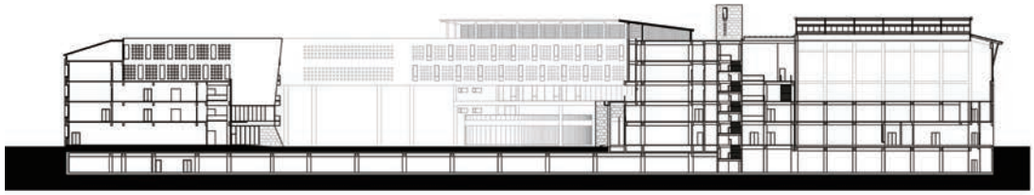


Site Plan 总平面图

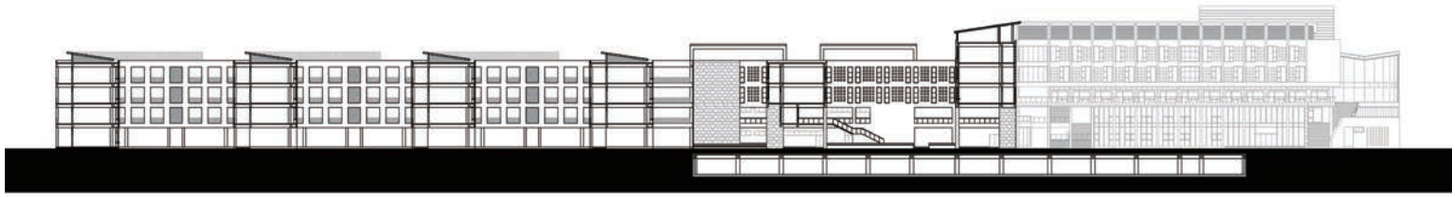
North Elevation of Primary School and Kindergarten 小学和幼儿园北立面图

Elevation 立面图

Façades of the architecture feature grey metal pitched roofs, beige stone and red bricks. The classic three-colour scheme becomes striking characteristics of the school. The pitched roofs characterise the enclosed public courtyards and contribute to the dynamic rise and fall of the architectural silhouette. The beige dry-fasten stone is used mainly on lower levels and façades facing the city to highlight the public and solemn character of the school. The in-between red bricks continue the tradition and history of the school. Thanks to the friendly texture of materials and the ternary composition of the façades, the vast complex won't feel depressing and suits well with children in scale.



Primary School and Kindergarten Sections
小学和幼儿园剖面图



1. Play space in the kindergarten
2. North façade of primary school and kindergarten and entrance square

1. 幼儿园活动场

2. 实验小学和附属幼儿园北立面，出入口广场

3

4

5

苏州市实验小学是一座具有百年历史的小学，2008年因旧城改造，市政府决定将小学及其附属幼儿园迁址新建，新校址包含实验小学60个班、幼儿园18个班。由于项目基地处于城市中心区，校园的规划设计面临一系列难题：用地受限、校舍建筑面积超标、活动场地与绿化空间的缺乏等。

针对上述问题，建筑师将新校园设计成一座建筑综合体，校园各功能区集约化形成彼此高度关联的一个系统；地上和地下的空间高度得到充分利用；各功能房间、活动场地和各类流线实现了立体化组织。建成后的校园综合体成为一个只有区段之分的整体建筑。从北面主入口开始依次分为行政及公共区、教辅区及教学区，三个区段建筑围合出一系列中庭和院落，形成六横三纵的系统架构。综合体的首层空间尽可能多地架空，这样教辅区和教学区的院落就串联起来形成校园内部的公共空间主轴，同时低层教室的顶部又形成与主通道联系便捷的空中游戏场。建筑空间的集约化有效地平衡了建筑场地与活动场地间的矛盾。

建筑立面以灰色金属坡屋面、米色石材和红色面砖作为主要材质，以经典的立面三段式处理形成校园基本的形式特征。坡屋面形式与走向表现出所围合公共空间的特征，并塑造出起伏有序、富有韵律的群体轮廓；米色干挂石材用以表达公共性与礼仪性，用于建筑底层和沿城市立面；立面中段的红色面砖用以表达历史和校园建筑传统。材质及立面的段式处理弱化了综合体的体量感和空间压迫感，使近人空间回归到小朋友的尺度。

3. Main entrance to the kindergarten
4. Main entrance square
5. Teaching building courtyard
6. Stilted teaching building, with a winding pavement linking all the courtyards

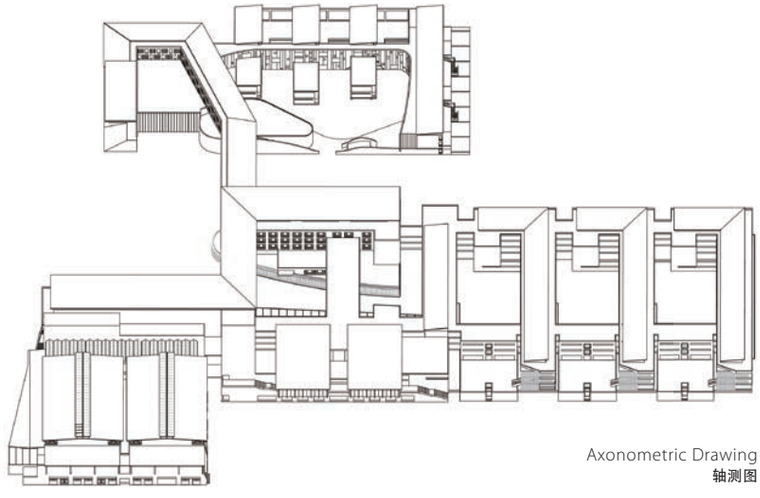
3. 幼儿园主入口
4. 主入口广场
5. 教学楼内院
6. 教学楼首层架空，
一条蜿蜒的街道串联所有院落

7

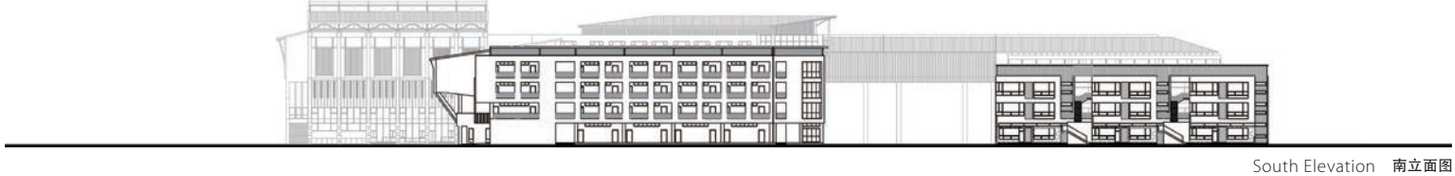
East Elevation 东立面图

West Elevation 西立面图

7. East stone façade of
the primary school in a warm tone
8. West façade
9. South façade of the kindergarten
7. 小学东立面以暖色石材为基调
8. 西立面局部
9. 幼儿园南立面局部



Axonometric Drawing
轴测图

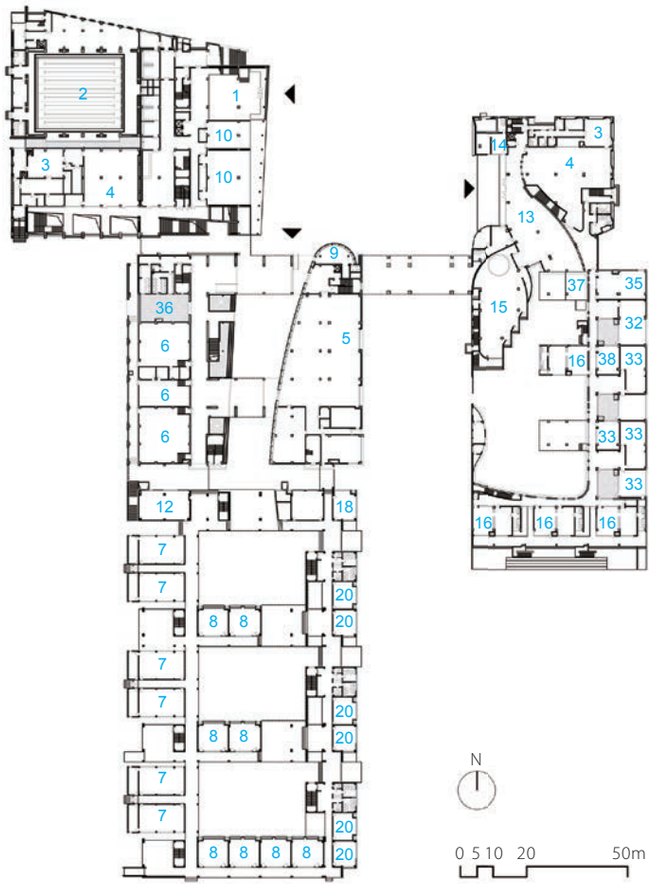


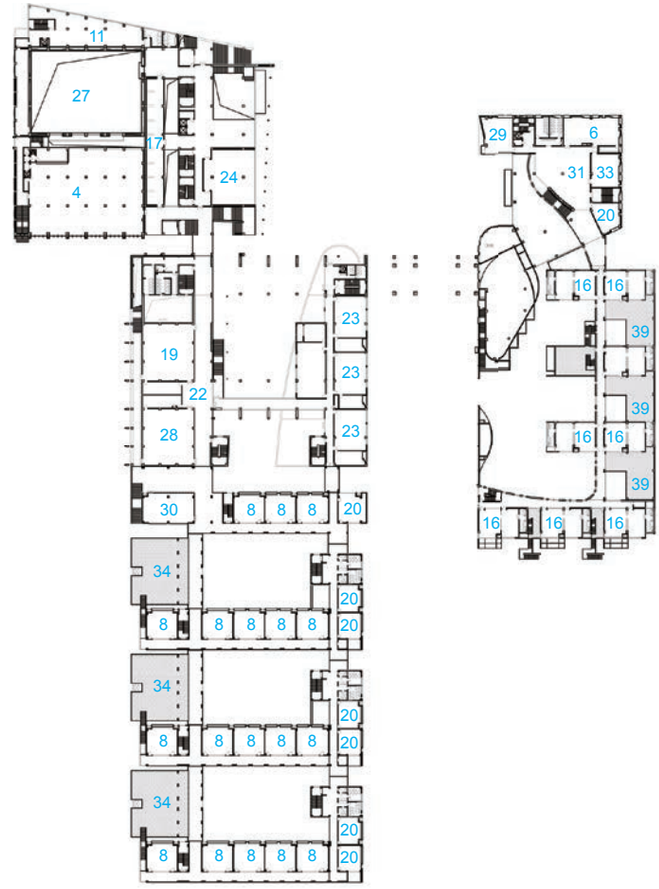
South Elevation **南立面图**

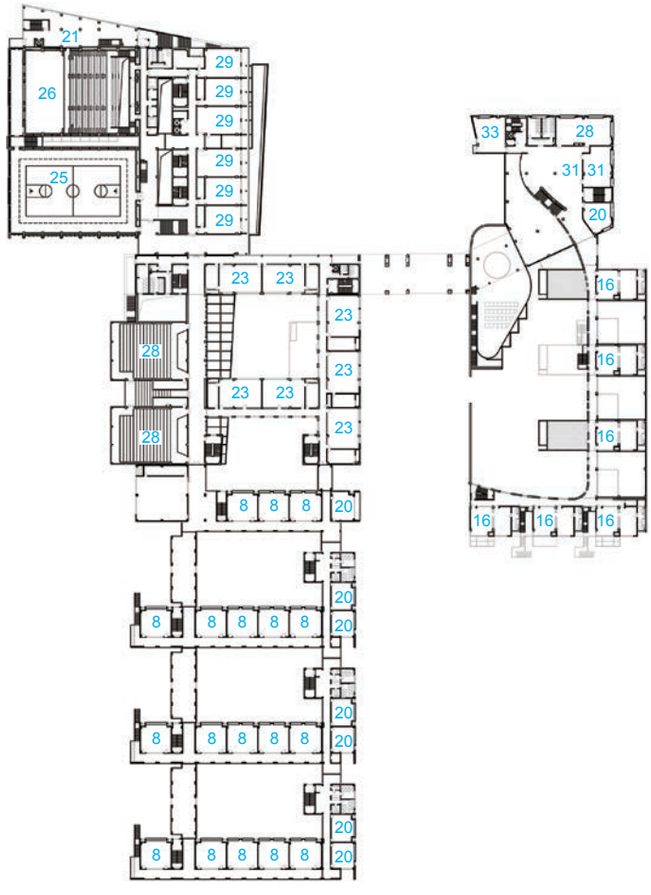
West Elevation of Kindergarten 幼儿园西立面图

10. Music & Sports facility in the kindergarten
11. Play space in the kindergarten
12. West façade of the kindergarten
10. 幼儿园音体教室与游戏场
11. 幼儿园活动场
12. 幼儿园西立面

13. Interior view of the Music and Sports facility
14. Indoor playground
15. Lecture hall
13. 幼儿园音体教室内景
14. 风雨操场室内
15. 大报告厅内部







Ground Floor Plan (Left Above), First Floor Plan (Above) and Second Floor Plan (Left):

1. Administration Building hall
2. Indoor pool
3. Kitchen
4. Students restaurant
5. Library
6. Dance classroom
7. Computer classroom
8. Classroom
9. Fire fighting control
10. Reception
11. General affairs
12. Plant room
13. Kindergarten hall
14. Morning checkout
15. Music & sport room
16. Activity room/bedroom
17. Exhibition room
18. Infirmary
19. Conference room
20. Teachers office
21. Lounge
22. Multimedia gallery
23. Auxiliary classroom
24. Teachers activity room
25. Playground
26. Lecture hall
27. Void
28. Multimedia classroom
29. Music classroom
30. Broadcasting room
31. Children library
32. Science & Discover room
33. Special classroom
34. Roof terrace
35. Meng pedagogy classroom
36. Courtyard
37. Sports room
38. Storeroom
39. Special outdoor play field

一层平面图（左上图）、二层平面图（上图）及三层平面图（左图）：

1. 行政楼门厅
2. 游泳馆
3. 厨房
4. 学生餐厅
5. 图书馆
6. 舞蹈教室
7. 微机教室
8. 普通教室
9. 消防控制室
10. 接待室
11. 总务
12. 机房
13. 幼儿园门厅
14. 晨检
15. 音体室
16. 活动室及卧室
17. 校史陈列室
18. 医务室
19. 大会议室
20. 教室办公室
21. 休息室
22. 多媒体展廊
23. 教学辅助教室
24. 教师活动室
25. 风雨操场
26. 报告厅
27. 游泳馆上空
28. 多媒体教室
29. 音乐教室
30. 广播室
31. 幼儿阅览室
32. 科学发现室
33. 专用教室
34. 屋顶平台
35. 蒙氏教学专用教室
36. 庭院
37. 体能室
38. 物品保管室
39. 专用室外游戏场地

16. Open reading room on the second floor atrium of the kindergarten
16. 幼儿园中庭三层开放的阅览室

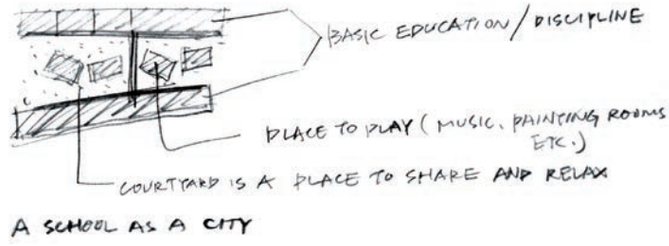
ETHNIC PRIMARY SCHOOL IN XIAOQUAN TOWN

Deyang City, Sichuan Province
HUA Li / TAO (Trace Architecture Office)

孝泉民族小学

四川 德阳 孝泉镇
华黎 / TAO 迹・建筑事务所

Site Area: 16,826m²
Gross Floor Area: 8,900m²
Structure: Reinforced concrete frame
Use: Classrooms, multi-purpose rooms, office, student dormitory, dining hall, etc.
Design/Completion Time: 2008-2009/2009-2010
Architect: HUA Li/TAO (Trace Architecture Office)
Design Team: ZHU Zhiyuan, JIANG Nan, LI Guofa, KONG Desheng
Photographer: YAO Li, JIANG Nan
Contractor: Huaxiluyi Construction Co., Ltd., Sichuan
Sponsors: Red Cross Society, Taicang, Jiangsu; Liuzu Buddhism Temple Charity, Sihui, Guangdong; Tsinghua & HKCU MBA Group; Peking University HSBC School of Business PE Fund; Qiaoai Organisation; Sichuan Society for Promotion of the Guangcai Programme
占地面积：16826平方米
建筑面积：8900平方米
建筑结构：钢筋混凝土框架
主要用途：教学楼、多功能教室群、办公、学生宿舍、食堂等
设计/建成时间：2008-2009年/2009-2010年
建筑设计：华黎 / TAO 迹・建筑事务所
设计团队：朱志远，姜楠，李国发，孔德生
摄影师：朱姚力，姜楠
施工单位：四川华西鲁艺建筑工程公司
捐助单位：江苏太仓红十字会、广东四会六祖寺慈善普济会、清华—香港中文大学金融MBA四川项目援建组、北大汇丰商学院私募股权108基金、侨爱协会、四川省光彩事业促进会



A SCHOOL AS A CITY

Background

The May 12th Earthquake destroyed the original Ethnic Primary School in Jingyang District, Deyang. Reconstruction was urgently in need. Xiaoquan town, with a population of about 40 thousand, is located on the northwest of Deyang, and is one of the most seriously destroyed areas in the earthquake. The reconstruction project includes a teaching building with 18 classrooms, multi-purpose rooms, student dormitory and dining hall, with a total floor area of more than 8,800 square metres.

The design begins on June 2008 when the architects came to Xiaoquan Town for site investigation. Due to the devastating earthquake, the buildings in the town completely collapsed or broke to be dilapidated. The common height of local architecture is two to four storeys, and streets are five to six metres wide, with twisting plans that are typical characteristics of historic towns. The original elementary school destroyed in the earthquake has been demolished, and a new site has been chosen on a nearby old street. The site area is a little smaller than the original, but is had to accommodate more students (about 900), among whom many are children of the farmers who come to town for work. Therefore, student dormitory and dining hall are necessary on the limited site. Temporary houses were built on the west of the site for junior high school students, which were scheduled to be demolished after the completion of the elementary school.

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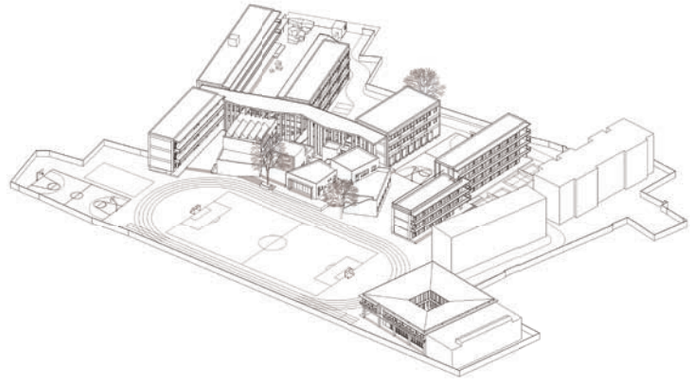
Strategy

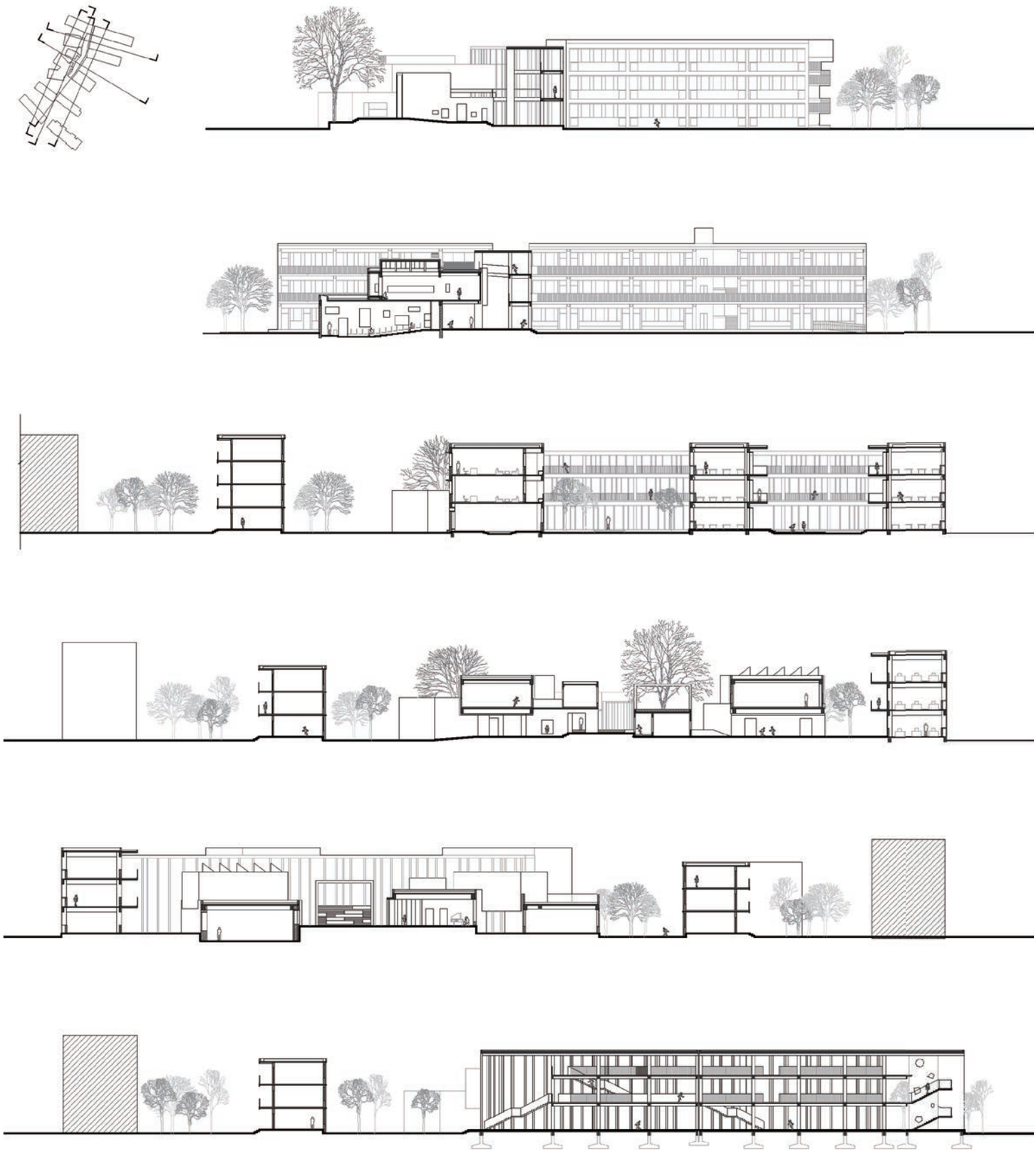
Before going to the site, the architects had been thinking for strategies. For disaster areas, reconstruction is a kind of development by leaps and bounds because capital, technology and awareness all come at once. Steps of local modernisation would speed up. Then, what should be the right attitude towards local traditions? Should the area take an altogether new look, or should it retain the memory of past space and life? Are workers, materials and building techniques transported from another area liable to make local characteristics disappear? Would local people positively join in the reconstruction, or just passively accept the result? Would local architecture industry make some progress or just stand by? In addition, in reconstruction efficiency is always urgently in need, and thus architectural industrialisation and standardisation easily become the mainstream. Would it lead to stereotyped buildings lacking of diversity, just like the case in Tangshan earthquake?

The fund for reconstruction of the Ethnic Elementary School came from different sponsors from various regions, who agreed to let the Education Bureau of Jingyang District handle the project. Therefore, according to local conventions, local contractors would be involved. Meanwhile, the new master plan of the town highlights the historical characteristics of



Overall Axonometric Drawing
整体轴测图

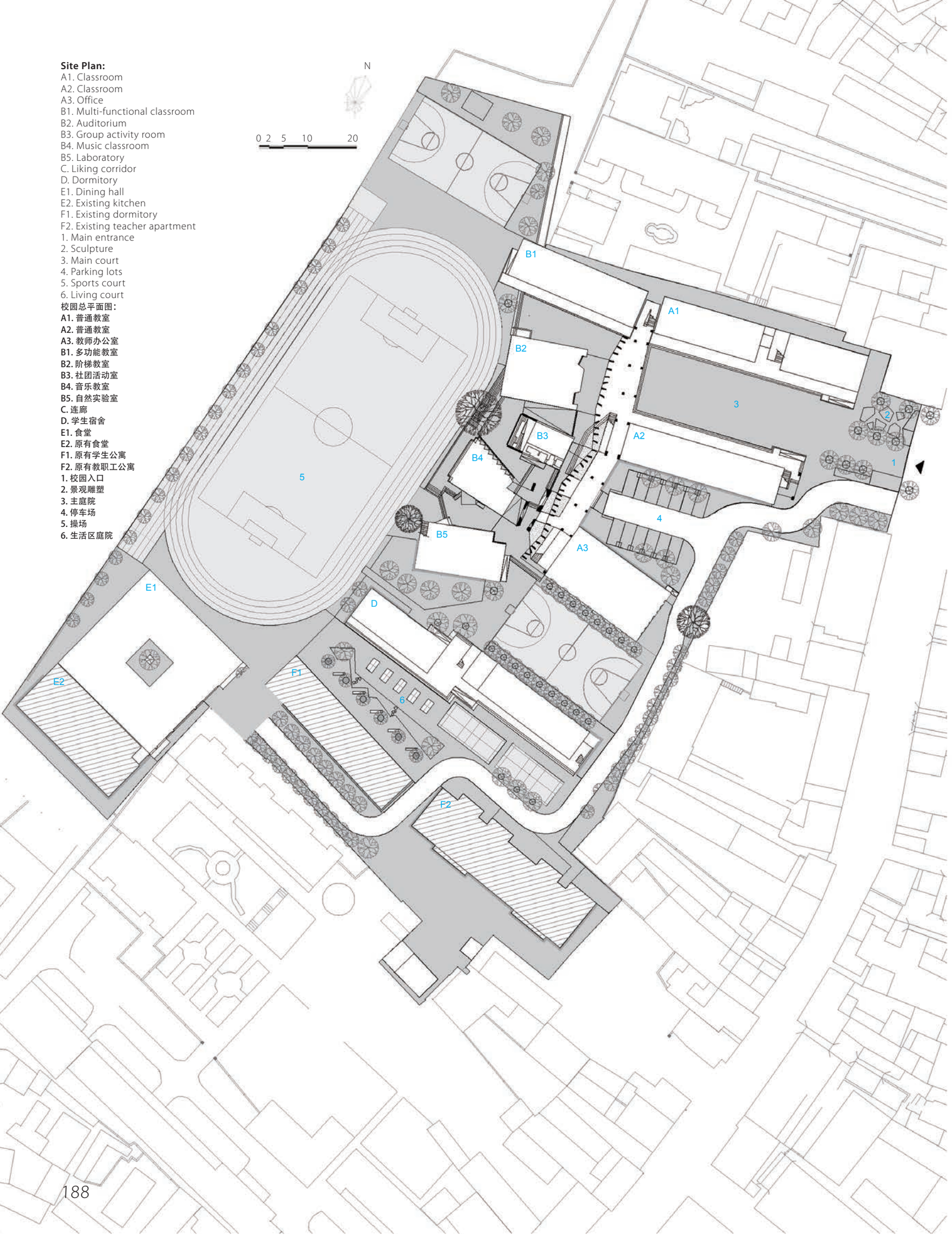
1,2. Street: recalling the memory of urban space in old Xiaoquan Town
3. Model, 1:150
1,2. 街道——孝泉镇城市空间记忆的延续
3. 模型1:150



Overall sections **教学区总体剖面图**

Site Plan:
A1. Classroom
A2. Classroom
A3. Office
B1. Multi-functional classroom
B2. Auditorium
B3. Group activity room
B4. Music classroom
B5. Laboratory
C. Liking corridor
D. Dormitory
E1. Dining hall
E2. Existing kitchen
F1. Existing dormitory
F2. Existing teacher apartment
1. Main entrance
2. Sculpture
3. Main court
4. Parking lots
5. Sports court
6. Living court

校园总平面图：
A1. 普通教室
A2. 普通教室
A3. 教师办公室
B1. 多功能教室
B2. 阶梯教室
B3. 社团活动室
B4. 音乐教室
B5. 自然实验室
C. 连廊
D. 学生宿舍
E1. 食堂
E2. 原有食堂
F1. 原有学生公寓
F2. 原有教职工公寓
1. 校园入口
2. 景观雕塑
3. 主庭院
4. 停车场
5. 操场
6. 生活区庭院



the old town. These conditions drive the architects to think about the interrelationship between the project and the region. Besides, without any unreasonable governmental deadline, the architects needn't sacrifice quality for efficiency.

The strategies for the project are based on two aspects: space and construction.

Space

In traditional schools, plans are set for the convenience of administration because there are always a large number of students and a rather small number of teachers, leading to prison-like spaces. Of course this is due to the limited budget, and this elementary school is no exception. In the project, concerning the layout the architects tried to keep children's perspective in mind, creating various, scattered and interesting spaces to encourage communication and multiplex activities between students, because after all, children are the main body of a school. The school is divided into three sectors: classrooms (Order Sector), multi-purpose rooms (Interest Sector), and outdoor ground (Relaxing Sector), offering different spaces for various activities.

Schools, as a kind of social space, should be conceived with particular local history. The architects are not interested in new types of memorial architecture. Instead, they conceive the school not as an architecture, but as a mini-city, which contains a micro society of students and teachers. In this sense, many spaces that belong to urban environment are created, such as streets, squares, courtyards and steps. The diverse spaces not only provide the pupils with different playing corners and interesting spaces for experience, arousing their curiosity and imagination when having fun, but also echo with the urban space of the town before earthquake in terms of scale and form. In this way, memory of the old town space is preserved, where the natural space complexity would give individuals more choices. Crude, overwritten reconstruction that totally demolishes the original urban space system is definitely not preferred. Sometimes it would be another disaster for people and their memory, psychologically.

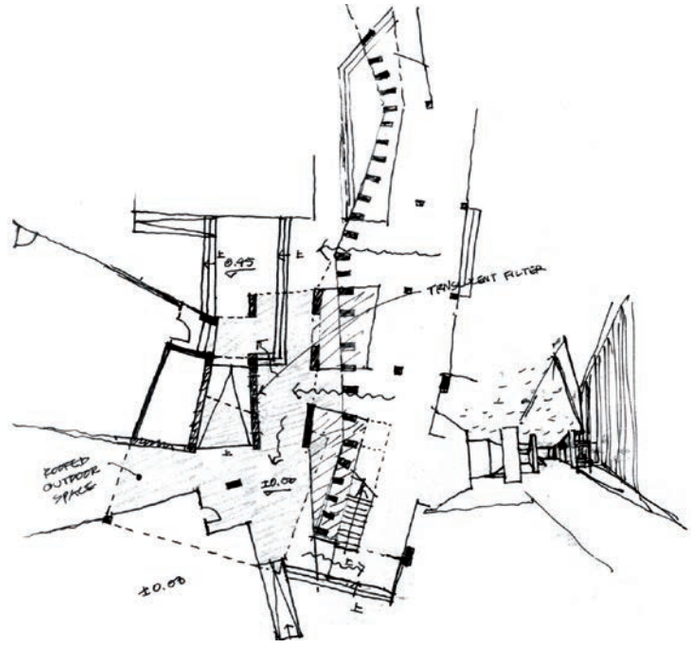
The main body is located at the east part of the site, near the school gate on the old street. On the west is the sports field, where temporary houses for junior high school are built. Such an arrangement effectively protects students in class from noises of construction. On the south the new and existing dormitories form a new living courtyard, while on the southwest corner the dining hall is connected to the existing kitchen.

The main body consists of three parts: on the east are teaching building and office building; on the west are a computer classroom, a language teaching classroom, an amphitheatre, an art classroom, an activity room, a playing gallery, a music classroom, two labs and their preparation rooms, etc. A vestibule (south-north, slightly twisting) between the east and west part connects all the programmes, which the architects called "spine". The spine acts for circulation, communication, ventilation and sun shade as well.

The teaching building and office building on the east are three-storey high, appropriate for children (buildings too high would be depressing), and the courtyard in between open to the main entrance of the school is easy for escape. Meanwhile, it acts as a solemn space for formal activities such as flag-rising ceremony and body exercise.

The multi-purpose classrooms on the west with different heights look like a micro city, with streets, steps, eaves gallery and courtyards, acting as a transitional area between the teaching building and sports field. The roof terrace further extends the usable outdoor spaces.

Two existing trees are preserved. A big Gleditsia sinensis nearly 20 metres high becomes the focal landscape facing the courtyard and steps. The steps act as a path connecting the teaching building and playground, and as a place for activities such as games, reading, photo-taking, and match-



watching. Under the steps is the activity room, to the south of which a playing gallery is located containing several corners with different scales. The skylight connects the outer steps with the space where various activities such as doing homework, kicking shuttlecocks and playing hide-and-seek take place. The children love this space and call it the "stone house".

The eaves gallery between the amphitheatre and playground has well-proportioned openings on the thick wall which are treated as alcoves as a kind of playing furniture for the children. In this way, the gallery is not only for circulation, and the openings create enchanting light and shadow effect in the interior.

The central spine is a vestibule connecting all the programmes. The side that faces the playground uses continuous concrete columns, creating a three-storey-high gallery space. The columns protect the space from the western sunlight and create an interesting light and shadow effect, enriching the visual experience. Three straight staircases connect different storeys, and several air-bridges link the art classroom, lab, steps and roof garden. On the ground floor, a long pool is designed between the columns and the staircases, effectively enlivening the space. Watching the fishes swimming in the pool is one of the favourite activities for the children.

A library occupies the ground floor of the teaching building. The south-


3

facing slender windows are deeply embedded into the wall in order to protect the room from the sun and to avoid accidental ball crushing from the playground. Inside the library there are quiet reading corners.

In designing the dining hall, ventilation and lighting are considered as two keys. The architects decide to make it a square plan with an inner courtyard, connecting to the existing kitchen to form an integrated whole. With the sloping roof, the courtyard feels friendly and comfortable, with spaces of various scales. The bamboo suspended ceiling further enhanced the cosy feel. The openings on the walls are well proportioned for children, solving the problems of view, ventilation and sun shade on different heights.

Construction

Different from conventional cases of transporting workers, materials and techniques from other areas, the project aims to realise localisation in the construction process. Its core lies in consideration for local climate, use of local materials and crafts, and applying building techniques suitable for the local case.

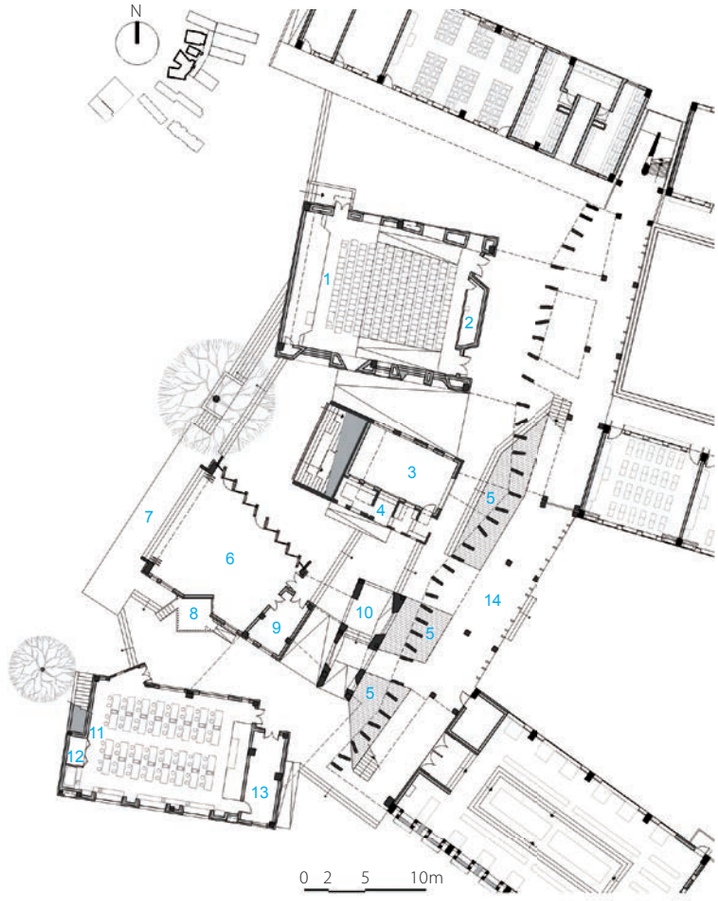
To be specific, the architects used local materials such as shale black bricks, timber and bamboo. After the earthquake, the town was short of bricks, and the bricks used came from different brickkilns near Deyang. The different bricks were used for different buildings, and thanks to their scattered positions and different scales, they wouldn't seem awkward and were completed in stages. Timber processing has a long history in Xiaoquan Town, and wood is plenty for use. In the project, timber is extensively used in door and window. Fixed glass windows and flexible wooden windows make the elevations tidy and clear. Local bamboos are used on the façades and suspended ceilings, acting as heat insulation and enriching the

Multi-Functional Classrooms Ground Floor (Right):
1. Auditorium
2. Projection room
3. Group activity room
4. Play space
5. Pool
6. Music classroom
7. Stage
8. Slide
9. Musical instruments room
10. Vestibule
11. Laboratory
12. Storage
13. Preparation room
14. Linking corridor (spine)

多功能教室区
局部平面一层（右图）：
1. 阶梯教室
2. 放映室
3. 社团活动室
4. 游戏廊
5. 水池
6. 音乐教室
7. 主席台
8. 滑梯
9. 乐器室
10. 连廊
11. 自然教室
12. 储藏室
13. 准备室
14. 长廊

4. Bird's-eye view of multi-purpose classrooms
5. Big steps
6. Between school and sports field
7. View to the roof

4. 阶梯教室鸟瞰图
5 .大台阶
6. 教学楼和操场
7. 阶梯教室屋顶



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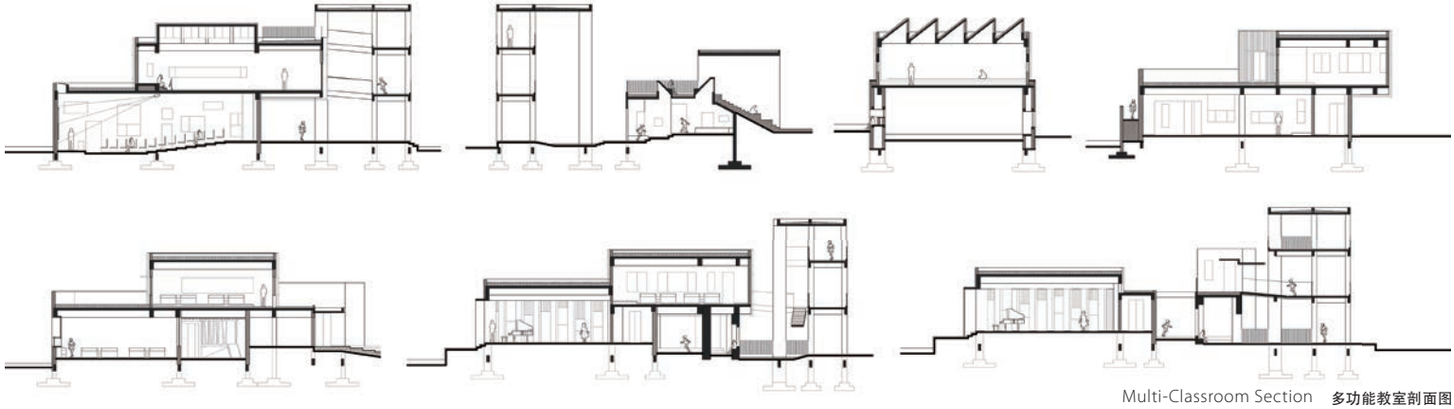

Multi-Classroom Section 多功能教室剖面图

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visual experience. Besides, recycled bricks are used in outdoor paving and benches, symbolically giving them a rebirth in reconstruction.

Concrete structure cast in site is applied in the reconstruction. The beams, columns and concrete walls are exposed with no decoration. The composite walls are wrapped with bricks and filled with thermal insulation materials. All these elements are clearly shown on the facades. The dormitory building uses bricks and concrete as load-bearing structure to reduce cost. The exterior is wrapped with black bricks, with structural columns, window lintels and floor slabs seen outside, so the structure of the building is obvious.

The project was initiated in December 2008; construction started in April 2009 and completed in September 2010. The Deyang-based contractor, Huaxiluyi Construction Co., Ltd., was dutiful in the construction and guaranteed the architectural quality. Particularly for the concrete cast in site, with few experience they made experiments on site to find effective technical solutions. However, concrete construction is always liable to make some mistakes on site. For example, slightly different casting time control leads to uneven wall surfaces, which are polished later. Therefore, some surfaces are left with such special textures and are preserved to show the true characteristics of current constructing techniques and to enrich the material. The final cost of the project is lower than 1,500RMB per square metre, achieving a successful budget management. The reconstructed Ethnic Elementary School has been put into use since October 2010.

8, 9. Passage space
10. Courtyard
11. Linking space
12. Terrace between big steps and linking space
13, 14. Linking space
8, 9. 走道空间
10. 庭院
11. 连廊空间
12. 大台阶与连廊之间的平台
13, 14. 连廊空间

9

Here are some descriptions of the new school from the pupils:

Entering the school, I immediately saw several buildings well arranged. I felt I was in a maze, going here and there just like an ant on a hot pan, and couldn't find my way. I was so exited at the thought of studying here and scampered around the school.

LI Xin, Class Five Grade Six

The windows were redesigned as comfortable wooden shelters protecting us from sunshine. There are steps beside the reading room where we can sit down reading interesting books at ease.

LI Zhuman, Class One Grade Five

Another interesting place in our school is the so-called "bomb shelter", which is constituted by several concrete stages. After class we play games or read books there. There are several openings for look-out, through which we can see the Music Hall while playing games. A staircase is located in the middle of the corridor, connecting the classrooms and playground. Here high and low steps are well proportioned and arranged: on the low steps we can scamper like rabbits, while on the high steps we can sit down to read a book.

CHEN Jiayu, Class Two Grade Five

The new school is a beautiful mini-city. I think there should be a library in our school, where we can know more about the fantastic world.

CAI Siqi, Class One Grade Four

Standing in front of the teaching building, you must be feeling puzzled and thinking "Which way should I take?" That's it! The teaching building is like a maze where you have to ponder the way every step you take.

WAN Yao, Class Six Grade Six

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Ground Floor Plan:

1. Sports apparatus room
2. Computer facilities
3. Computer room
4. Toilet
5. Teacher duty room
6. Classroom
7. Auditorium
8. Group activity room
9. Play space
10. Music classroom
11. Music instruments room
12. Slide
13. Vestibule
14. Laboratory
15. Preparation room
16. Reading room
17. Dormitory
18. Duty room
19. Linking corridor (spine)

一层平面图：

1. 体育器材室
2. 计算机机房
3. 计算机教室
4. 卫生间
5. 教师值班室
6. 普通教室
7. 阶梯教室
8. 社团活动室
9. 游戏廊
10. 音乐教室
11. 乐器室
12. 滑梯
13. 连廊
14. 自然实验室
15. 准备教室
16. 阅览室
17. 宿舍
18. 值班室
19. 连廊

背景

5.12汶川大地震使德阳市旌阳区孝泉镇民族小学的教学楼损毁，学校迫切需要重建。孝泉是一个人口四万左右的镇，位于德阳西北面，紧邻绵竹，也是受地震破坏比较严重的地区之一。学校的灾后重建内容包括18个班的教学楼、各种活动室、学生宿舍、食堂等，共8800多平方米。

项目的设计工作始于2008年6月，受重建捐助方委托前往震后的孝泉镇进行实地考察。孝泉镇上的房子或倒塌，或开裂成了危房。镇上的房子高度基本为两到四层，街道大多五六米宽，街道的格局转折而富有变化，具有历史古镇自然生长的城镇空间特征。小学原教学楼遭地震破坏后已拆除。重建选择了新校址，位于相距不远的一条老街上，校园占地面积16826平方米，比原校址稍小，但需要容纳更多的学生（约900人）。学生人数众多，且很多是进城打工的农民工的孩子，需要提供足够的宿舍和食堂空间供孩子们住校，因此项目的用地条件很不宽裕。场地的西侧在震后搭起了临时板房供孝泉初中部的学生上课，并将一直持续到小学的建筑建成方能拆除。

思考

去孝泉之前，关于灾后重建已经在思考这样几个问题：重建对于灾区是一种跳跃式发展，因为大量资金、技术、意识由外部引入，将使当地突然加速现代化的进程，那么重建对地区传统采取什么态度？大刀阔斧的焕然一新，还是谨慎延续空间和生活的记忆？直接由对口援建地区输入的工人、材料和建造手段会让灾区原来的地域特征消失吗？本地人会积极参与到重建中，还是仅仅只是接受重建的结果？本地的建筑业会因重建而发展进步，还是只是旁观者？另外，重建对效率的迫切需要必然会导致工业化和标准化的建造方式成为主导，这会否导致重建的千篇一律而丧失多样性，就如当年的唐山？

孝泉民小项目的重建资金是来自全国不同地区的社会各方捐助，捐助方同意将资金交由旌阳区教育部门来具体操作小学的重建工作，因此根据当地程序，建造将由德阳当地的施工单位来承建，而非全由外部地区输入。同时新的孝泉城镇规划的定位要求强调孝泉的历史古镇特征。这些外部条件促使设计师必须思考这个项目与地域的内在联系。另外，没有地方领导违背客观规律硬性要求建成时间的军令状，也给项目留出了空间，不必因单纯追求效率而忽视质量。

项目的设计思考从建筑最根本的两个问题出发：空间和建造。

空间

传统的学校由于老师少学生多，往往是以管理的便利为核心来考虑建筑格局（这个小学存在类似的问题，这种局面当然与教育财政的投入有

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关），往往形成集体性、监狱式的空间。本案中，设计师在考虑空间时，更多从儿童个性的视角出发，尝试通过创造多样的、分散的和有趣的建筑空间去鼓励小学生的交流和多元的行为模式，因为小学生才是学校的主体。设计将校园按照秩序、兴趣、释放三种行为特征分为三个区域，分别是普通分班教室区、音乐美术等多功能教室群和室外运动场，为课内课外的多种活动提供不同的场所。

设计考虑空间的另一特征是校园作为一种社会空间的复杂性及其与历史的延续性。设计师对新纪念物式的建筑造型之宏大叙事毫无兴趣，没有把学校仅仅视为一个建筑，而是将校园理解为一个微型城市，它微缩了一个学生和老师的小社会。设计因此营造出许多类似于城市空间的场所：街巷、广场、庭院、台阶等，这些多样化的场所一方面给小学生们提供了不同尺度的游戏角落和有趣的空间体验，试图激发小孩的好奇心和想象力，使他们在游戏中去释放个性。另一方面，这些类型空间在尺度上和形态上都与孝泉镇震前的城市空间相呼应，将有效地延续对城市空间的历史记忆，设计师希望基于自然生长形成的孝泉镇所特有的自下而上式的空间复杂性在建筑中得以呈现，并给予个体更多的环境选择，而不是大刀阔斧地借重建之机将原来的城市肌理粗暴地抹去。那种简单覆盖重写式的建设对人的记忆和心理有时无异于另一场灾难。

设计在校园布局上将主体建筑布置在整个场地东侧，靠近位于老街上的校门；西侧为运动操场（这里为震后的临时板房教室占据，这样布局也可避免建筑施工对上课的影响）；南侧新建宿舍楼与原有宿舍楼形成新的生活的院落，食堂则布置在西南角，与原有厨房结合在一起。

主体建筑主要由三部分组成：东侧部分包括两栋基本教学楼和教师办公楼；西侧部分包括计算机教室、语音教室、阶梯教室、美术教室、社团活动室、游戏廊、音乐教室、两个自然实验室及其准备室等多功能教室群。东西两部分的中间则是一条横贯南北又轻微曲折变化的连廊将所有功能区联系起来，设计师称之为“脊椎”。脊椎既是交通、交流的空间，又起到导风和遮阳的作用。

东侧基本教学楼和教师办公楼的建筑高度为三层，主要考虑庭院适合儿童的尺度比较亲切，避免建筑过高带来的压抑感，且有利于疏散。两栋基本教学楼之间的庭院正对着校园主入口，形成一个具有仪式感的空间，可以举行升旗、做操等相对正式的集体活动。

西侧的多功能教室群的形态高低错落，如同一个微缩城市，形成了如街巷、台阶、檐廊、庭院等丰富的空间类型，成为教室楼和运动场之间的过渡地带。可上人的屋顶平台延伸了建筑中可活动的户外空间。

First Floor Plan:
1. Computer facilities
2. Computer room
3. Toilet
4. Teacher duty room
5. Classroom
6. Art classroom
7. Roof terrace
8. Void
9. Preparation room
10. Laboratory
11. Office
12. Dormitory
13. Linking corridor (spine)

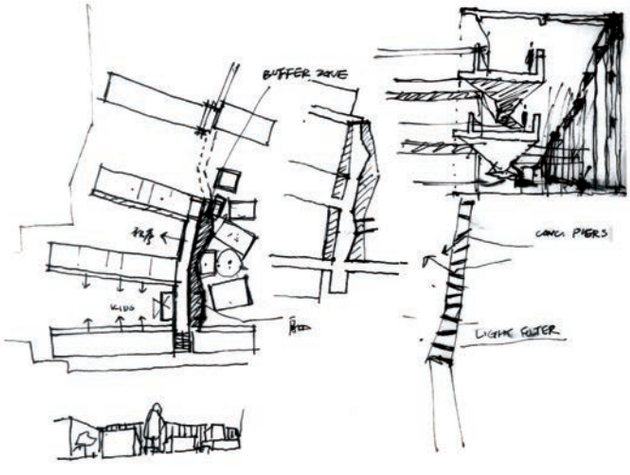
二层平面图:
1. 计算机机房
2. 计算机教室
3. 卫生间
4. 教师值班室
5. 普通教室
6. 美术教师
7. 屋顶平台
8. 音乐教室上空
9. 准备教室
10. 自然实验室
11. 办公室
12. 宿舍
13. 连廊（脊椎）

12

校园中原有的两棵大树得以保留，一棵将近20米的皂角树成为正对核心庭院和大台阶的景观，大台阶既是联系教学楼和操场及食堂的通路，又是多种活动的场所，台阶上的游戏、读书、集体照相、看比赛等。大台阶下面是社团活动室，其南侧是一个游戏廊，内部有几个大小不一的角落，上面的天窗与大台阶联系，这个小空间促发了很多的儿童活动：写作业、踢毽、捉迷藏等，建成后学生非常喜爱，被称为“石屋”。

通往操场的街巷空间一侧的阶梯教室墙面上的窗洞通过充分利用墙厚而处理成凹入的“儿童家具”，可容纳很多偶发的儿童集体游戏活动，使得这一空间并非仅仅是通过性的。这些错落的窗洞在室内则形成了丰富的光影效果。

中间的“脊椎”是一个联系所有功能的长廊，其朝向操场一侧用连续的一米进深的混凝土立柱序列形成一个三层通高的柱廊空间，遮挡西晒的同时，创造丰富的光影效果和视觉层次。三部直跑楼梯联系上下楼层，几个“连桥”穿越高空将二三层的走廊和美术教室、自然实验室、大台阶以及屋顶平台相连。一层在柱廊与楼梯之间设置了条形的水池，使空间更为活跃。在水池里观鱼也成为学生最喜爱的课间活动之一。



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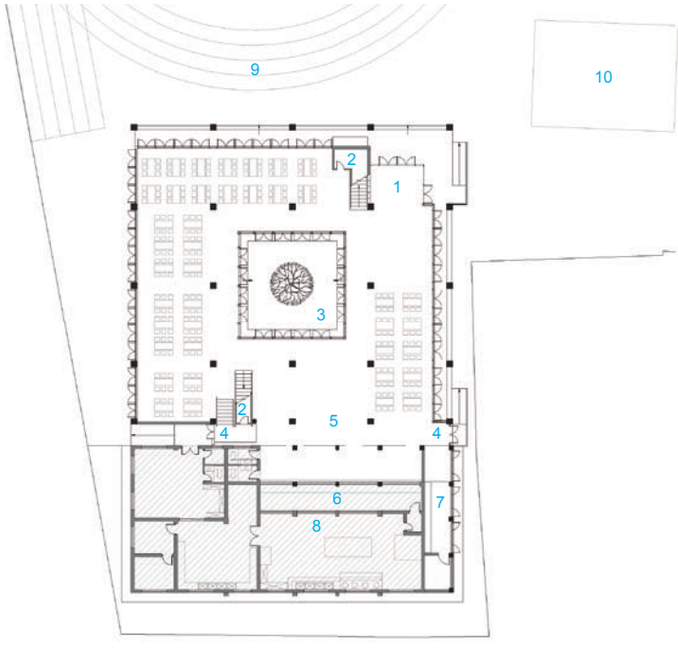

Ground Floor Plan of Dining Hall:
1. Main entrance
2. Storage
3. Patio
4. Secondary entrance
5. Queue area
6. Food window
7. Dishwashing
8. Existing kitchen
9. Sports court
10. Dormitory

食堂首层平面图：
1. 主入口
2. 储藏室
3. 庭院
4. 次入口
5. 排队区
6. 打饭窗口
7. 洗池
8. 原有厨房
9. 操场
10. 宿舍

教师办公楼的一层是阅览室，其南侧设计了凹入较深的细窄长窗户，为了遮阳并避免外面操场打球碰撞玻璃，内部则形成阅读的角落。

食堂的设计考虑到通风和光线的需要，做成一个中间有内院的方形体量，与原有的厨房相连成为一个整体。内聚的坡屋面使庭院尺度相对亲切，在内部则形成了由高到低尺度变化的空间，竹吊顶加强了这一空间内聚的印象。立面窗户的设计充分考虑小学生的身体尺度并与之相呼应，视线、通风、遮阳分别在不同高度解决。

建造

与大量援建项目直接由外地输入工人、材料、技术不同，这个项目致力于实现一个高度本地化的建筑过程。回应本地气候，对本地材料、工艺的充分利用，采用本地适宜的建造手段等构成了建造的核心内容。

具体而言，设计主要利用的当地材料，包括页岩青砖、木材、竹子等，地震后砖作为基本建材在灾区非常紧缺，所用的砖来自于德阳附近的数个砖窑，每一批质地都略有不同。恰好由于建筑体量分散，用在不同体量上也还比较自然，且可分期施工。木材加工则在孝泉很有历史传统，有很多资源可用，门窗采用实木门窗，固定扇为玻璃，开启扇为木头，立面效果整齐干净。竹子也来自当地，主要用在外墙面及吊顶，起到隔热和视觉丰富作用。此外，地震后回收的旧砖也用于景观工程中的地面和座椅等，使其象征性地参与到重建中获得再生的意义。

建筑主体结构采用现浇混凝土框架体系，外露的梁柱和混凝土墙体以清水方式处理，填充墙为外层清水砖墙和内层保温砌块的复合墙体。上述元素在主体建筑立面上均清晰体现出其交接关系，反映出建构体系的逻辑。宿舍楼则是一个完全的砖混承重的楼以节省造价，外部用青砖包裹，构造柱、窗过梁、楼板等构件在立面上均清晰可见，也是希望体现建构的清晰性。

项目于2008年12月奠基，2009年4月动工，2010年9月竣工。施工方华西鲁艺建筑公司来自德阳当地，在建造中非常尽心尽责，对保证建造质量起了很大作用。尤其是清水混凝土的浇注，在并没有太多过往经验的情况下，通过现场对模板支护细节和混凝土标号的几次实验摸索，总结出有效的技术手段，确保了最终的效果。当然，混凝土施工也不可避免地存在许多失误和缺憾，例如开始的浇注时间控制导致的墙面肌理不匀，模板分格的错误以及局部浇注时暴模等。为了弥补对粗糙表面进行了打磨处理，局部形成一些墙面的特殊质感均得到保留和呈现，这种施工当中的痕迹倒也体现出当下建造的一些特征，反而丰富了材料本身的叙事性。整个项目最终的建筑工程造价在1500元/平方米以下，很好地实现了整体预算控制。重建的孝泉民族小学已于2010年10月投入使用。


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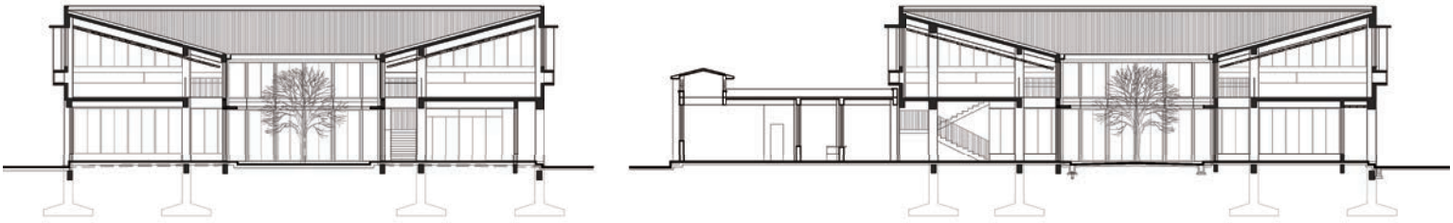
15. First floor of dining hall
16. Façade of dining hall
17. Openings on multi-purpose classrooms wall
18. Interior of multi-purpose classroom

15. 食堂二层内部空间
16. 食堂外立面
17. 阶梯教室墙上的窗洞
18. 阶梯教室内部



Dining Hall Sections　食堂剖面图

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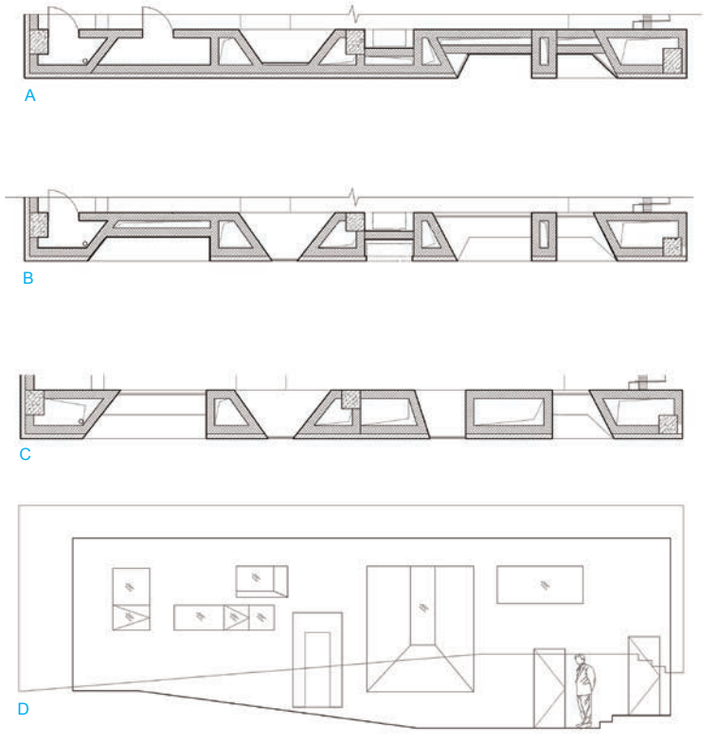


Wall Detail:
A. Enlarged plan, South wall, Auditorium (level 0.9m)
B. Enlarged plan, South wall, Auditorium (level 1.8m)
C. Enlarged plan, South wall, Auditorium (level 2.6m)
D. Elevation, South wall, Auditorium
阶梯教室南墙墙身：
A. 阶梯教室南墙放大平面（标高0.9米处）
B. 阶梯教室南墙放大平面（标高1.8米处）
C. 阶梯教室南墙放大平面（标高0.9米处）
D. 阶梯教室南墙室内立面

附孝泉民族小学的小学生们对新学校的一些描述：

走进学校，呈现在眼前的是一栋栋错落有致的教学楼。我像进了迷宫似的到处乱窜，好像热锅上的蚂蚁，可总找不到路。一想到自己以后就要在这里读书了。就兴奋得一蹦八丈高，到处参观。——六年级五班 李欣

一个个窗子都被改造成了一个个乘凉的木板房，舒服极了。阅读室旁边有很多小台子，我们可以在那里坐着看看闲书，很舒服。——五年级一班 李竺蔓

我们学校还有一个有趣的地方“防空洞”，其实那只是几个用水泥做的休闲台，下课了，我们在里面看书……里面还有几个瞭望口，我们做游戏躲在里面还可以通过瞭望口看到外面——音乐厅。走廊中部有一个从教室到操场的楼梯，这是个高高矮矮的，错落不一的楼梯，同学们像小兔子一样，在矮的楼梯上蹦蹦跳跳的玩耍，还有的在高的楼梯上坐下看书。——五年级二班 陈佳宇

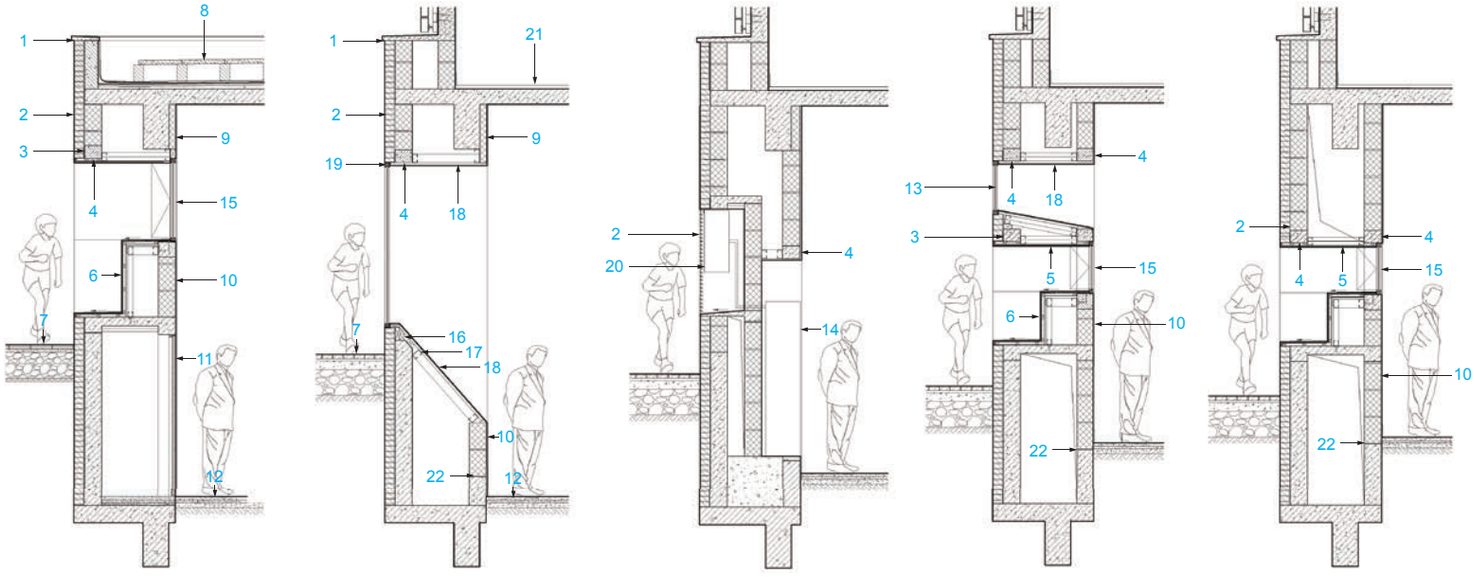
新学校是一个美丽的城市。我觉得我们校园里应该有图书馆，可以了解课外的奇怪和美丽。——四年级一班 蔡思琪

来到教学楼前，你一定会百般疑惑，这该怎么走呢？对啦！教学楼是迷宫式的，每走一步就会思索一会儿。——六年级六班 万瑶

到新校园之后，就出现了“新”同学，以前同学们的活动空间都是较小的，现在增大了，同学们的野心也增大了……来到新校园，许多同学心中都充满了好奇心，书包一放下，脚就发痒，硬是约上几个同伴，兴致勃勃地探访校园。哪一处都要走过，每一处几乎都要摸过。之后心情便才舒畅，得意扬扬的样子，欢跃的心情，每一次转完校园，每个人都会这样。——六年级五班 杨凉

往楼上走，那墙上还有大大小小的形状，什么正方形、长方形都有。有时，坐在那里聊会儿天也好，可有的同学看了，却说：“这些人教书都教疯了，数学图形都弄到墙上来了！”——六年级三班 朱俊禅

学校给我的第一印象——大！这所学校，不知有多么大，像一座迷宫似的，第一次独自去玩的时候，走在一个觉得很深很深的地方。上课了，也找不到回教室的路了，但在我与母亲交谈中慢慢地把这个缺点变为了我的兴趣！——五年级四班 谭鑫



Wall Detail, South Wall, Auditorium (Above):

1. Concrete coping
2. 120mm brick
   200mm aerated concrete block
   15mm gypsum plastering
3. 115/115mm steel angle
4. Concrete lintel
5. Wooden board
6. Wooden chair
   20mm timber board
   Wood batten
   Waterproof layer
   Plywood
   Steel stud
7. 240/115/53mm brick
   30mm screed
   300mm sandstone
   Tamped soil
8. 495/495/50mm precast concrete pane
   115/115/200mm brick support
   4mm waterproof layer
   20mm screed
   50mm polystyrene thermal insulation
   Reinforced concrete roof
9. Thermal insulation block
10. White paint
    2mm plaster cladding
    8mm screed
    Cement paste
    200mm aerated concrete block
11. White paint wooden door
12. 40mm fine aggregate concrete
    1.5mm waterproof layer
    30mm screed
    Screed with building adhesive
    60mm concrete
    Tamped soil
13. Double glazing fixed window
14. A.C unit
15. Openable window
16. Wooden batten
17. Steel frame
18. White paint
    2mm plaster cladding
    8mm screed
    15mm gypsum board
    Steel frame
19. 50x50mm steel angle window frame
20. Grey aluminium alloy shutter
21. 40mm fine aggregate concrete
    Screed with building adhesive
    Reinforced concrete slab
22. 20mm 1:2 cement mortar
    with 5% dampproof agent

阶梯教室南墙墙身（上图）：

1. 混凝土压顶
2. 页岩青砖砌筑120
   蒸压加气混凝土砌块墙200
   粉刷石膏抹灰15
3. 115×115角钢过梁
4. 混凝土过梁
5. 木饰面
6. 木座椅
   20厚实木板
   木龙骨
   防水层
   胶合板
   钢龙骨
7. 240×115×53页岩砖
   30厚1:3水泥砂浆
   300厚级配砂石
   素土夯实
8. 495×495×50 C20 预制混凝土板
   115×115×200（h）砖砌支座
   两道卷材防水层4
   1:3水泥砂浆找平层20
   聚苯板保温层50
   找坡层 最后处30
   现浇混凝土屋面
9. 保温块
10. 白色乳胶漆饰面
    2厚面层专用粉刷石膏罩面
    8厚粉刷石膏砂浆打底分遍抹平
    素刷水泥浆一道
    200厚加气混凝土空心砌块墙
11. 木门刷白
12. C20细石混凝土40厚
    1.5厚聚氨酯防水层
    1:3水泥砂浆30
    水泥砂浆一道（内掺建筑胶）
    C15混凝土垫层60
    素土夯实
13. 双层中空固定玻璃窗
14. 空调机
15. 开启窗
16. 木方
17. 钢龙骨
18. 白色乳胶漆饰面
    2厚面层专用粉刷石膏罩面
    8厚粉刷石膏砂浆打底分遍抹平
    15厚底层石膏板
    轻钢龙骨
19. 50×50角钢窗框
20. 灰色铝合金百叶
21. C20 细石混凝土40厚
    水泥砂浆一道（内掺建筑胶）
    现浇混凝土楼板
22. 防潮层：20厚1:2水泥砂浆加5%防水剂

MAOPING VILLAGE SCHOOL
Leiyang City, Hunan Province
in+of architecture, Studio Wang Lu of Tsinghua University

毛坪村浙商希望小学
湖南省 耒阳市
壹方建筑，清华大学建筑学院王路工作室

Site Area: 5,273m²
Gross Floor Area: 1,168m²
Design/Completion Time: 2006/2008
Architect: in+of architecture, Studio Wang Lu of Tsinghua University
Design Team: WANG Lu, LU Jiangsong, HUAN Huaihai, ZHENG Xiaodong
Collaborator: School of Architecture, Hunan University
Sponsor/Client: Zhejiang Association of Commerce in Hunan Province
Contractor: Farmers from Maoping Village
Photographer: Christians Richter, WANG Lu
Awards: Chicago International Architecture Awards, 2010;
Architectural Design Merit Award, Architectural Society of China, 2008

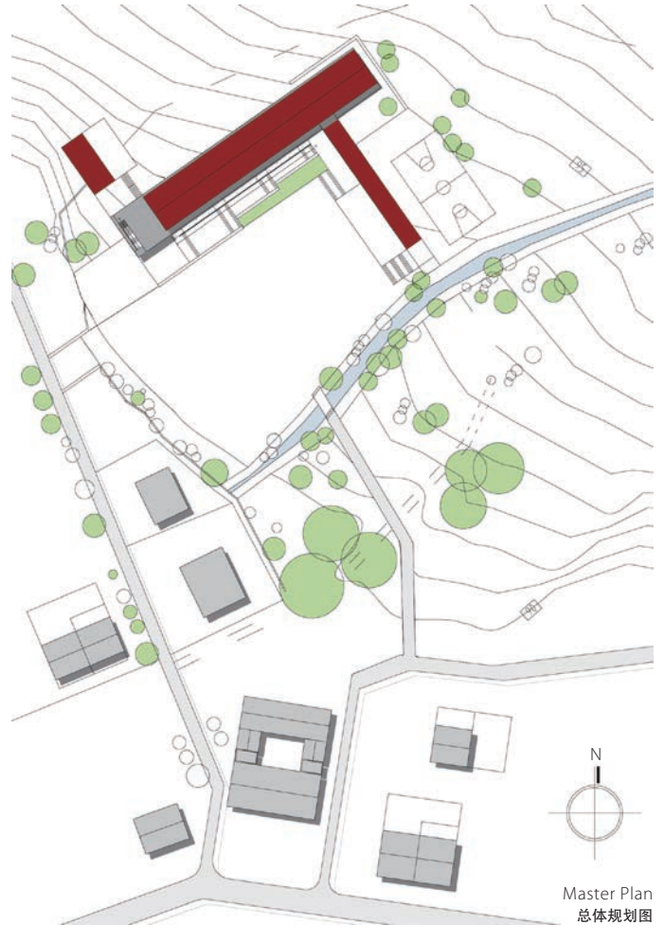
占地面积：5273平方米
建筑面积：1168平方米
设计/建成时间：2006年/2008年
建筑设计：壹方建筑、清华大学建筑学院王路工作室
设计团队：王路，卢健松，黄怀海，郑小东
联合设计：湖南大学建筑学院
捐助/委托：湖南省浙江商会
施工团队：毛坪村村民
摄影师：克里斯提安斯·里克特，王路
所获奖项：2010年芝加哥国际建筑奖；
2008年第五届中国建筑学会建筑创作优秀奖

On July 19, 2006, rainstorms and mountain floods caused by Typhoon "Bilis" destroyed the buildings of the primary school in Maoping Village. Zhejiang Association of Commerce in Hunan Province urgently raised 500,000 RMB on July 29, 2006 for building a new primary school – Maoping Village School. The money was used for ground-levelling, playground facilities, desks and blackboards, school uniforms, and so on. The total floor area of the school is 1,168 square metres, and the actual construction cost (including interior plaster rendering) is 300,000 RMB, which amounts to 300 RMB per square metre.

Voluntarily undertaking the task of designing the Maoping Village School, Studio Wang Lu started site analysis on August 5, 2006. Together with local villagers, they completed the construction of the new primary school on December 8, 2007. The whole process lasted for sixteen months.

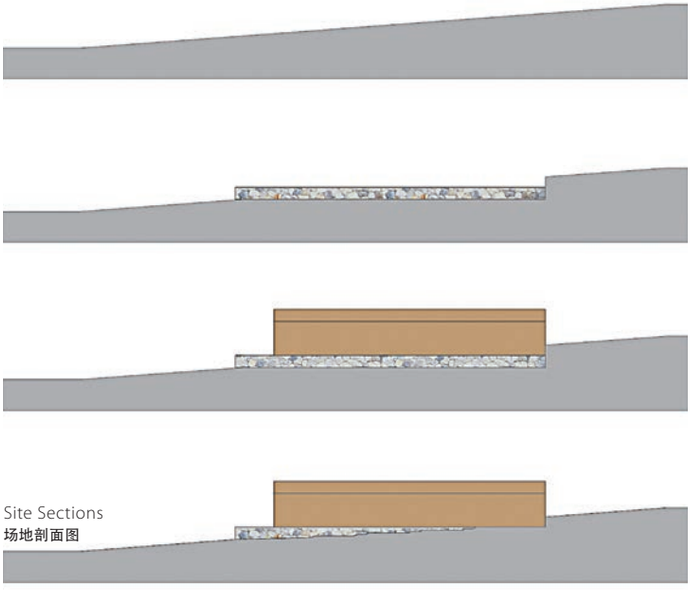
Leiyang, located in the south of Hunan Province, is the home place of Cai Lun, the inventor of paper-making in the Eastern Han Dynasty. Maoping, which is 30 kilometres to the south of Leiyang, is a small mountain village with its simple folkways. Surrounded by hills on all sides, the village and its houses continuously spread out by following the topographical contours of hills and valleys, with the ancestral shrine at its centre. Along with the development of economy and the advancement of urbanisation, great changes are taking place in Maoping Village, as in the vast rural areas of China.

The site of the primary school is on the slope in the northeast of Maoping Village. The two-storey school building stands on a terraced ground that is embedded in the slope. The configuration, cross-section, materials and colours of the building are basically isomorphic to local houses, and the scale of its gables is largely commensurate with the surrounding houses. The division of the structure by small sky-wells that correspond to teachers'



Master Plan
总体规划图

2



Site Sections
场地剖面图

3

offices and staircases renders the whole building resembling a cluster of local houses; through the breaking-up of the whole, the school amicably blends with the local environment. In order to keep the construction cost under control and to adapt the project to local construction techniques, bricks are employed as the main building material: red bricks are used for the building so as to have a better dialogue with the surrounding houses, whereas the limited amount of large grey bricks are applied to roads, paths, and open grounds.

The design began with learning local residents' way of life and interpreting local residential buildings. Containing solutions for local design problems, local experience of building formed a basis for the exploration of new architectural expressions. With a modernist sensibility, the architects sought to invoke the essential spirit of local culture, and at the same time relate it with contemporary life. In this way, not only is the new primary school endowed with memory of the past, keeping alive the good tradition of local residential buildings in their appropriate adaptation to the local conditions, but, while revealing local characteristics, it can also open-heartedly constitute a place with a spirit of times and a real sense of culture, so as to expand the values of local culture, and represent the humanistic character of the particular building type as embodied in the school.

The northern brick façade has a few brick lattice works piercing through each of the wall, a measure of architectural treatment that was derived from the tradition of local houses, where this technique had been applied in order to reduce deadweight of the wall and to ensure ventilation. The largest wall with lattice work of this kind on the north side of the lobby becomes the only "decoration" for the lobby space, and entering the lobby, one is presented with a digitalised scene of the outside landscape, making the space distinctive.

The southern façade, with wooden framework screen as its integral part, similarly borrowed the language of local architecture, so that the building was instilled with certain symbolic significance. Like an unfolded role of bamboo slips for writing in ancient China, the façade gains an air of scholarship for the primary school building. The corridor on the first floor is thereby distinctive: when one looks out into distance, it seems as if the landscape is present behind a stretch of woods, and the building therefore is not only an architectural structure but also a toy with intersected light and shadow, which children can enter, and with which remain the special memories of living in Maoping.

1. Terrace at the main entrance
2. Southeast view
3. Steps at the entrance
4. South façade
5. Landscape view

1. 主入口台地
2. 东南远观
3. 入口台阶
4. 南部外观
5. 周围景观

Section
剖面图

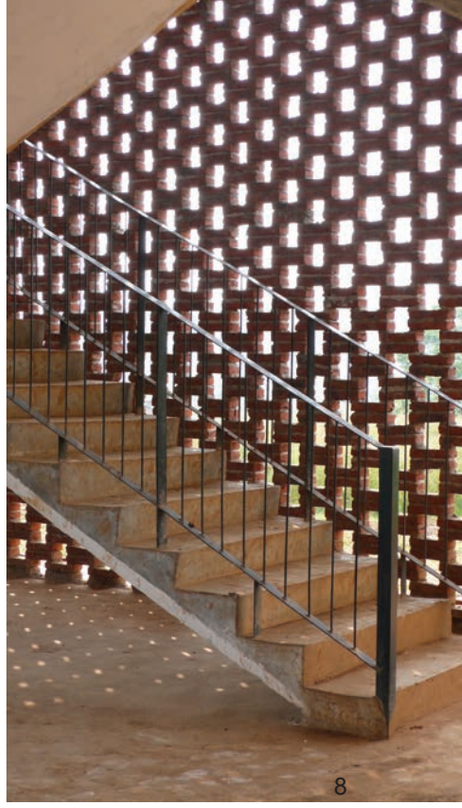
6

Maoping Village School was built at a low-cost as a site-adaptive rural primary school, to which local building materials were applied, and in the construction of which local residents participated. It not only features the local character and humanistic connotations, but also is enriched with the spirit of the times. The practice of its design was one of the Studio's explorations of building in economically disadvantaged areas, and of making creative efforts in the process of cultural and technical continuation. The process of building a learning place for children itself is also a rare educational experience.

6. North façade
7. West brick wall
8. Stairs in the hallway
6. 北部外观
7. 西面砖墙特写
8. 门厅

North Bird's-eye View **北侧鸟瞰图**

7



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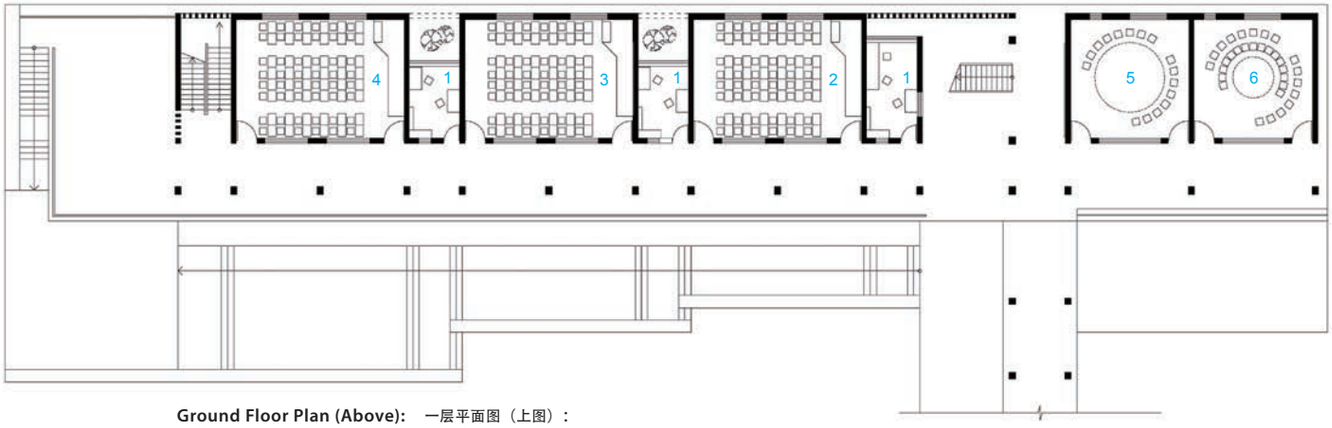

Ground Floor Plan (Above): 一层平面图（上图）：

1. Office	**1.** 办公室
2. Classroom for grade 1	**2.** 一年级
3. Classroom for grade 2	**3.** 二年级
4. Classroom for grade 3	**4.** 三年级
5. Activity room	**5.** 活动室
6. Children's room	**6.** 幼儿班

First Floor Plan: 二层平面图：

1. Office/meeting room	**1.** 办公室/会议室
2. Library	**2.** 图书室
3. Office	**3.** 办公室
4. Classroom for grade 4	**4.** 四年级
5. Classroom for grade 5	**5.** 五年级
6. Classroom for grade 6	**6.** 六年级

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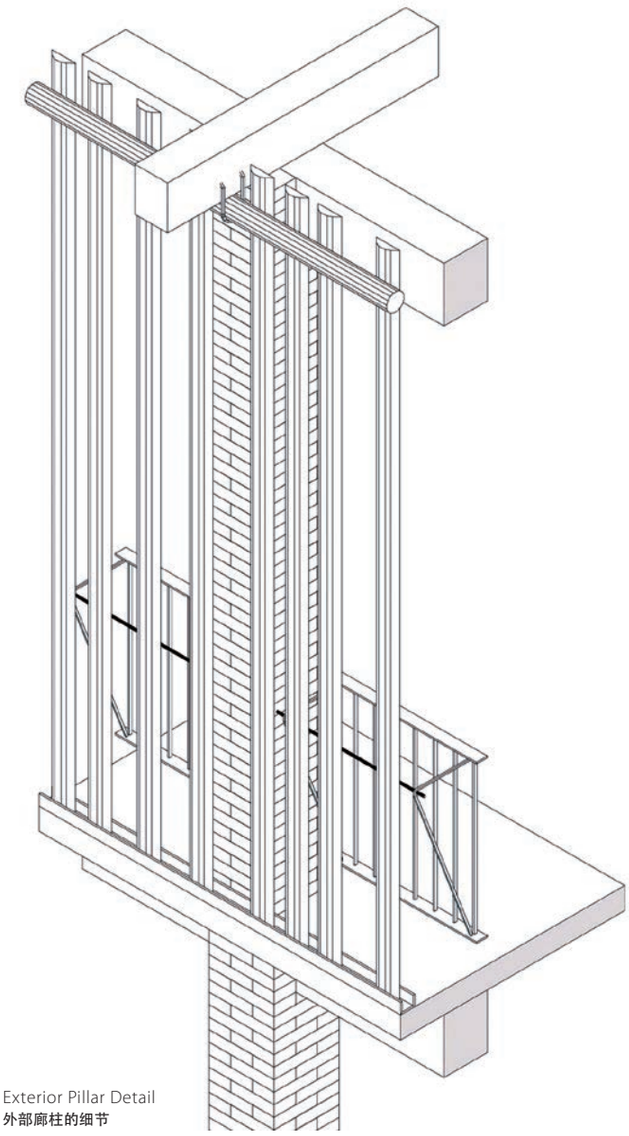


Exterior Pillar Detail
外部廊柱的细节

2006年7月19日，“碧利斯”台风引发的暴雨与山洪摧毁了毛坪村原有小学的校舍。7月29日，湖南省浙江商会紧急筹资50万人民币，用于新建一所小学，即毛坪村浙商希望小学。这笔款项主要用于学校平整场地、修建操场活动设施、黑板、课桌椅、校服等。新小学总建筑面积约1168平方米，实际工程造价30万元（包括室内石膏），每平方米造价约300元。

清华大学建筑学院王路工作室志愿承接了毛坪村浙商希望小学的设计任务。工作室于8月25日开始进行建设场地分析，项目施工由毛坪村村民于12月8日完成，整个过程耗时16个月。

毛坪村位于湖南省南部耒阳南侧30公里的一个小山村（耒阳是东汉造纸术发明人蔡伦的故乡），四面环山，民居依山势而建，起伏有致，祖祠位于村庄中心。随着经济发展和城市化进程的推进，毛坪村也像国内广大农村地区一样，正发生着翻天覆地的变化。

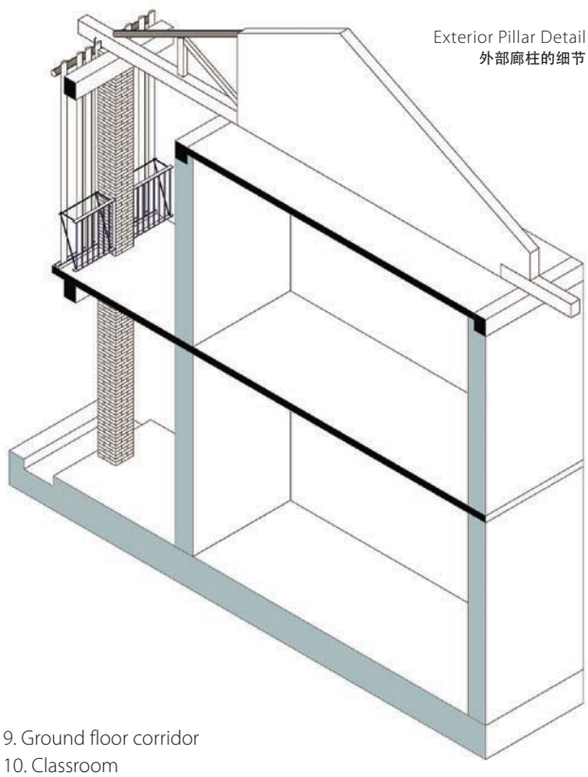
希望小学基地在茅坪村东北的一块坡地上，建筑的体形、剖面、材料、色彩与当地民居基本同构。整栋建筑高两层，通过对应于教师办公和楼梯间的小天井划分，像是一组民居的集合；通过这种化整为零的办法，校舍友善地融入了环境。为了控制造价、适应当地施工工艺，砖仍然是建筑的主要材料：小红砖用来砌筑建筑，与周边民居更好地对话；存留不多的大青砖用来铺砌道路、广场。

设计师先是研究了茅坪村村民的生活方式和当地民居的构造，在此基础上打造了适合当地情况、能解决当地问题的特定方案，为探索全新的建筑表现形式奠定了基础。设计师试图以现代的眼光挖掘当地文化的精髓，同时使其与现代生活建立联系。这样，不仅赋予这所希望小学历史的记忆，因地制宜地保留当地传统民居的优良元素，而且通过展现当地建筑特色，让这所学校代表了茅坪村的历史、文化、传统、精神，充分表现出这种建筑形式的人文关怀。

砖砌的北立面，有几处镂空的砖砌花格墙，其做法来源于当地民居。当地民居中，为了减轻自重、保证通风，采用这种镂空砖墙砌法。这里位于门厅北侧最大的一堵花格墙，成为门厅唯一的“装饰”，人于厅中，外面的风景像素化地呈现，空间也有了特色。

木格栅的南立面像展开的简牍长卷，使希望小学的建筑获得了一个略带书卷气的立面。二楼走廊也因此与众不同：向外望去，风景仿佛展现于一片树林之后，建筑不单是一栋房子，还是小朋友可以进入的一个玩具，光影交织，留下童年在毛坪生活的特殊记忆。

毛坪村浙商希望小学工程造价低，因地制宜，应用当地材料，并由村民参与建造。这所乡村小学不但具有本土性格和人文内涵，而且富有时代精神。其设计实践是王路工作室为贫困地区建造和在传承中创新的一次探索。为孩子们打造一个学习之所，这本身就是一次难得的教育经历。



Exterior Pillar Detail
外部廊柱的细节

9. Ground floor corridor
10. Classroom
11. First floor corridor
12. Façade concept
9. 一层走廊
10. 教室
11. 二层走廊
12. 立面概念

11

12

PRIMARY SCHOOL AT HEIHU VILLAGE
Mao County, Sichuan Province
BCKJ Architects

黑虎乡壹基金自然之友小学
四川省 茂县黑虎乡
北京别处空间建筑设计事务所

Site Area: 6,482.4m²
Gross Floor Area: 4,409.04m²
Completion Time: 2010
Architect: BCKJ Architects
Design Team: DONG Mei, LIU Xiaochuan, ZHANG Yang, YAN Haisong, SHAO Wenwei, XU Gang
Structure Architect: Institute of Residential Building Design & Research Co., Ltd., Beijing
Photographer: LIU Xiaochuan, DONG Mei
占地面积：6482.4平方米
建筑面积：4409.04平方米
设计/建成时间：2010年
建筑设计：北京别处空间建筑设计事务所
设计团队：东梅，刘小川，张扬，颜海松，邵文威，徐港
结构设计：北京住宅建筑设计院有限公司
摄影师：刘小川，东梅

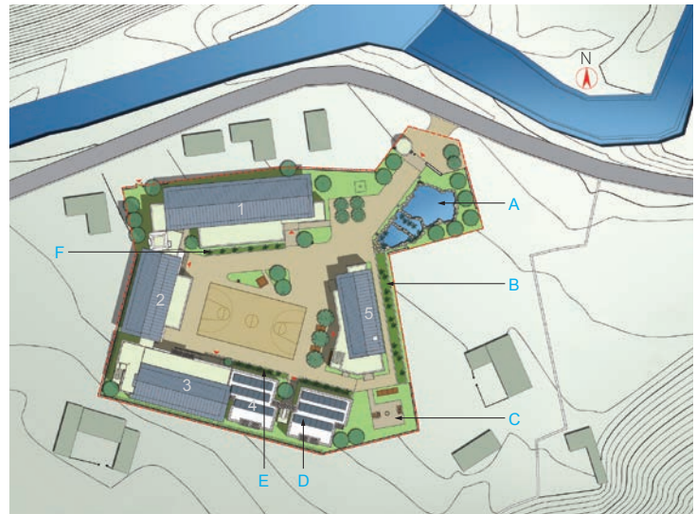
Background
After the 5.12 Wenchuan Earthquake in 2008, the Primary School at Heihu Village in Mao County, Sichuan was built. The project was sponsored by One Foundation from Shanghai and was organised by an association from Beijing called Friend of Nature. The boarding school opened on October 2010. From design conception to material selection to construction, the project was dedicated to green concepts such as environmentally-friendly architecture, energy saving and resource recycling, and resulted in a sustainable new school, which is now the place for Friend of Nature to give lectures on environmental protection. In this way, green concepts are carried forward from architecture to education.

The primary school was located on the east of the township government building, 27 kilometres from the town. The boarding school accommodates eight classes, with 320 pupils and 24 teachers. The building complex includes five sections: 1. teaching building (with offices); 2. canteen for students; 3. dormitory for students; 4. dormitory for teachers; 5. outdoor facilities.

Design Concepts and Features
1. Green Architecture Concepts: Basic Technology, Low Cost, Low Carbon, and Zero Emission
1). Local material and architectural language
a. Rubble stone is readily available in the village and extensively used in the construction. Therefore, cost on material transportation was effectively reduced. And, local traditional wall construction technique is properly adopted.
b. The walls are constructed with a thermal insulation layer made of rigid polyurethane foam and cement gel with rice hulls. The walls are more solid and meanwhile, cheap local materials – rice hull, for example – help enhance their thermal performance.

Site Plan (Below):
1. Teaching building
2. Office building and multi-functional hall
3. Students' dormitory
4. Teachers' dormitory
5. Dining hall, kitchen and hot water room
A. Eco-poll: tertiary treatment of waste water, which is then discharged into river
B. Mini eco-wetland: secondary treatment of waste water
C. Septic tank: sanitary sewage treatment and providing partial fuel for kitchen
D. Solar photovoltaic panels: providing school living water
E. Mini eco-wetland: primary treatment of sanitary waste water
F. Mini eco-wetland: primary treatment of sanitary waste water

总平面图（下图）：
1. 教学楼
2. 办公楼、多功能厅
3. 学生宿舍楼
4. 教师宿舍楼
5. 餐厅、厨房、开水间
A. 生态水池——三级处理校园污废水，无害化后排入河中
B. 小型生态湿地——二级处理校园污废水
C. 沼气化粪池——处理生活污水并提供厨房部分燃料
D. 太阳能光热板——提供学校的生活用水
E. 小型生态湿地——一级处理生活废水
F. 小型生态湿地——一级处理生活废水




教学楼

2

3

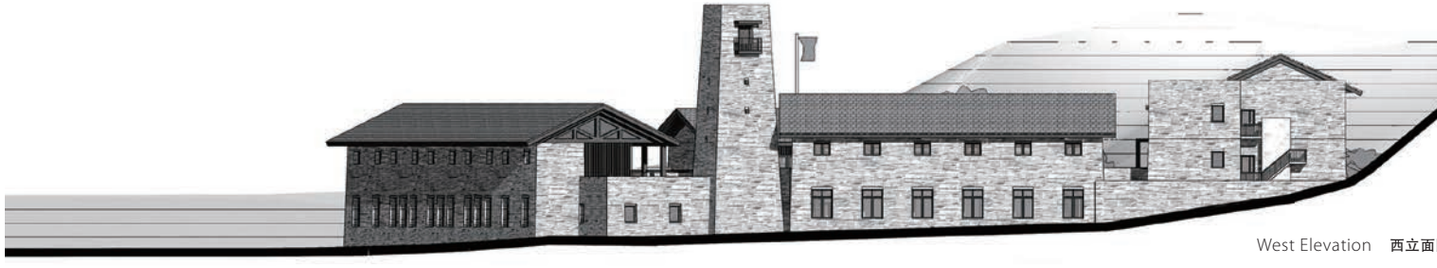
1. Surrounding topography
2. School context
3. Bird's-eye view
1. 校园的周边地势
2. 校园与环境
3. 山村鸟瞰

South Elevation 南立面图

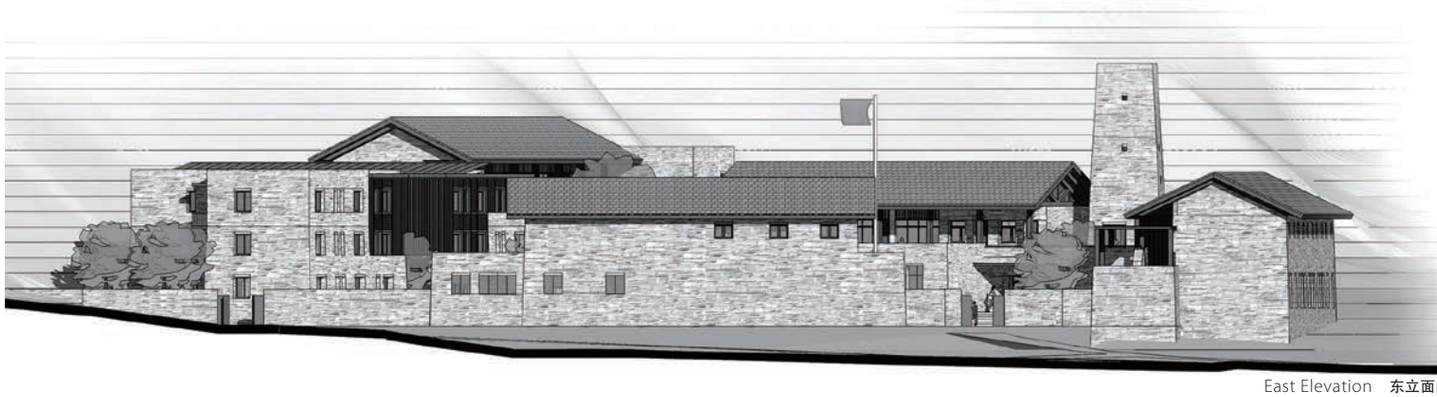
West Elevation 西立面图

North Elevation 北立面图

East Elevation 东立面图



West Elevation 西立面图



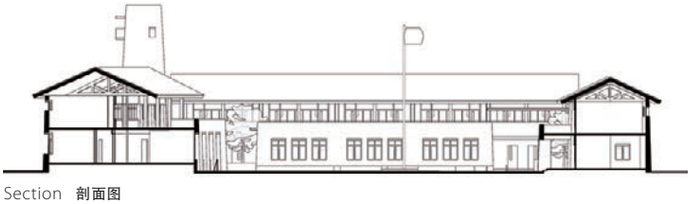
East Elevation 东立面图

4

c. Locally processed double-layer glass windows with wooden frames are adopted to reduce thermal lost.

2). Energy saving
a. A solar energy collector system is installed on the roof of teachers' dormitory. It provides hot water for students' bath and the kitchen.
b. Solar photoelectric technology is adopted to supply lighting power.
c. Since local water and electricity are not expensive, the architects reserved places and outlets for future electric radiators, and outlets for future induction cookers in the kitchen.
d. The energy consumption of the school is estimated as 30kwh/year.

3). Waste dumping and reuse
a. Bricks and stone of the earthquake-demolished buildings are used for back filling of the site.
b. Methane septic tanks are built to supply fuels for the kitchen, and liquid methane and organic manure for nearby farmers.
c. Urine is collected to provide highly-efficient organic manure for nearby farmers.
d. Garbage sorting. Garbage from kitchen, fallen leaves, and other organics are collected in the tanks as raw materials. Students participate in the garbage sorting to experience natural recycling.



Section 剖面图

e. Three small wetlands are built to process sanitary waste. Water from hand washing, bath and kitchen (after oil-separation process) is discharged into the wetlands. In this way, the environment is protected and a special landscape in the school is created.
f. An eco-pool is built for students to study the water quality and water plants, and also for further purification of grey water. Students take part in the planting and maintenance to witness the purification process.
g. Exhaust from the kitchen is processed before emitting into the air, reducing pollution as much as possible.
h. Rain water is collected on the roofs for courtyard sweeping and plants irrigation. Students participate in the process to experience water recycling.
i. Water-permeable bricks are used for courtyard paving, protecting underground water resources.

4). Energy-saving equipments
a. Energy-saving and fluorescent lamps are adopted instead of incandescent ones.
b. Water-saving sanitary equipments such as taps are used.
c. Solar lamps are used for courtyard lighting.

5). Social sustainability
a. Traditional building materials (such as rubble stone) and local construction techniques are adopted.
b. It is an open school in which the library is open to villagers and the multi-purpose hall can be used for villager training.
c. The solid school architecture becomes an emergency shelter.
d. It is a low-cost, green school. With a total cost of 9,785,000RMB (2,219RMB/m^2), the project successfully balanced the budget. Almost all the cost was used on improvement of safety and other properties of the building. Students' chairs are all old ones. Building material prices were unexpectedly high due to the earthquake and the traffic problem it caused, so the actual cost is 16% higher than the budget. The solar photoelectric panels are donated by the factory.

With green concepts, the project achieved the eco-friendly goals of "basic technology, low cost, low carbon and zero emission". The school is where environmental protection awareness starts for the students. With traditional architectural language, the school is perfectly integrated into the local context. For the local people, the project is a successful case of carrying out sustainable concepts in their hometown reconstruction, complying with national rules on construction.

With safe and friendly buildings, green and lively playground, the school is a harmonious element in the village and acts as a place of communication between the town and village. It is a Qiang ethnic minority village, and dignity and pride of the ethnicity are integrated into the school, which is endowed with heart and soul and thus becomes a school with emotion, responsibility and hope, a school to leave you beautiful memories. The primary school is expected to be an exemplary project about how to harmonise architecture with local contexts.

2. Design Features

1. The school architecture is decomposed into sections with residential scales, which are interrelated and integrated into the village. The building and spaces are designed to suit local climate and regional characteristics.

2. The village in which the school is located is a traditional Qiang ethnic village. The neighbouring Heihu Qiang Camp on the hillside is a famous cultural heritage. The school buildings used traditional architectural language of local residences, simplified and developed it with contemporary construction techniques. The architects paid homage to the local culture and hoped the school to be inspiring for future projects.

3. The contradiction between the utilisation of local material (rubble stone) and the requirement for 8-grade anti-earthquake structure is solved. With built-in columns and scattered concrete reinforcing grids, the otherwise loose structure became solid and compact. With the idea of "rebirth after the disaster", the school is an emergency shelter for the village as well.

4. The design contains careful consideration and convenience for the students. For the master plan, direction of the sunshine and wind in the mountainous region is well considered to make the school be bathed in warm natural light. For circulation, sheltered galleries are designed between different programme sections. Due to the limited site area, the architects made use of the roof to create a terrace for communication and activity for students on the first floor in class intervals. In village schools, dry latrines are built in school corners conventionally, but here water toilets are conveniently set in both teaching and living sections. On the ground floor, barrier-free facilities are adopted; for example, ramps are set to replace steps, and other barrier-free facilities in washrooms and bathrooms. The wavy washbasin is a considerate design for students with different heights.

4. Basketball court
5. Distant view of Teaching Building
4. **篮球场全景**
5. **教学楼的远景**

Sections **剖面图**

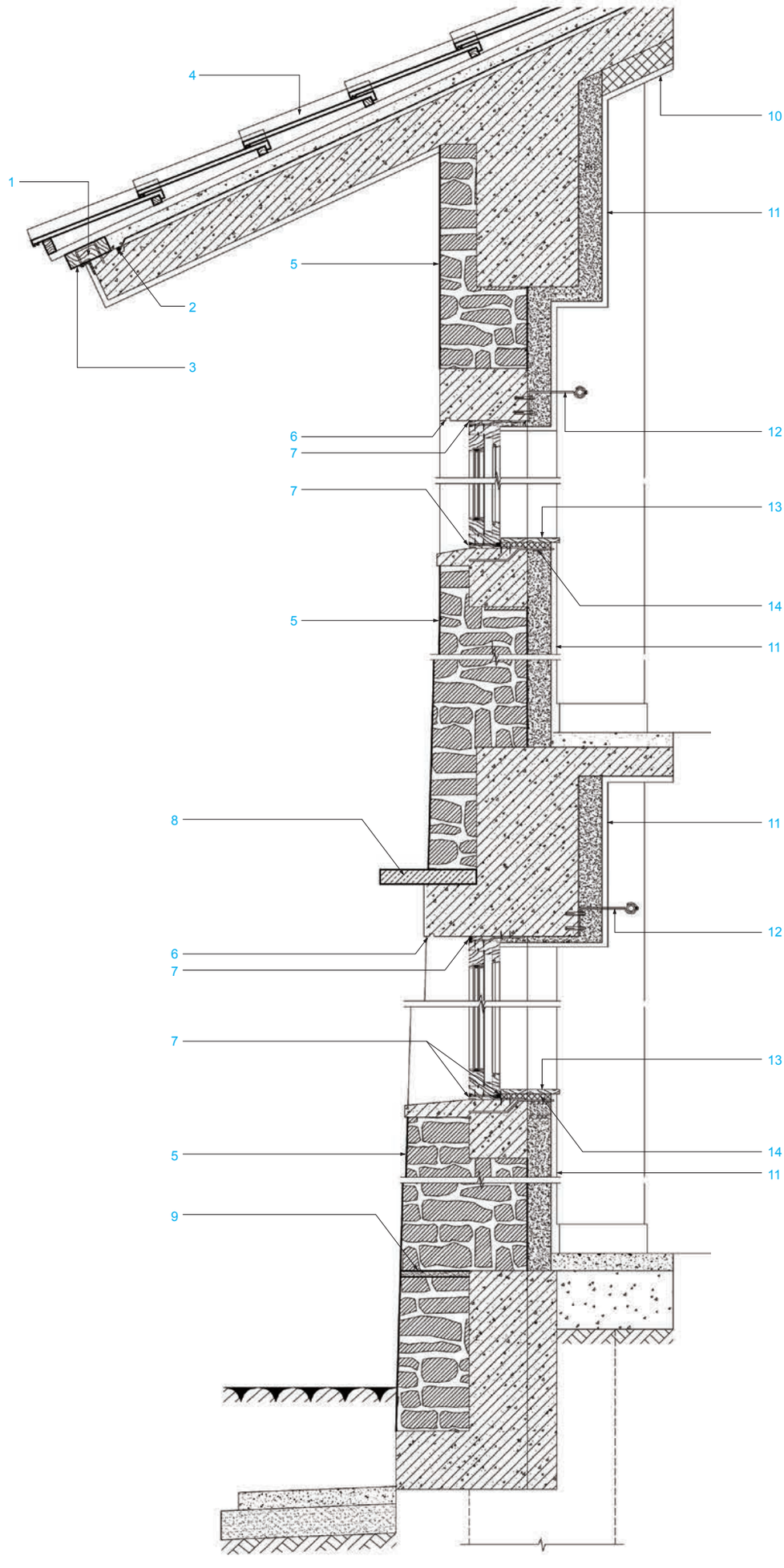
6

7

8

6. View of Teaching Building from basketball court
7. Rain water collection with simple equipment
8. Campus
9. Space in front of Teaching Building
10. Exterior main staircase

6. 从篮球场望向教学楼
7. 简易的雨水收集装置
8. 校园
9. 教学楼前
10. 室外主楼梯



Façade Detail (Right):

1. 150×50 wood border
2. Seal
3. L50×50×7-50 @500
4. Roof 2
5. Façade 1
6. 15×10 water drop
7. Seal
8. Rubble stone cornice (same width as beam)
9. 20mm waterproof mortar
10. Ceiling
11. Interior wall 1
12. Curtain pole
13. 15mm wood windowsill
14. 20mm polyphenyl filler

外墙详图（右图）：

1. 150×50木方收边
2. 密封膏封堵
3. L50×50×7-50 @500
4. 屋面2
5. 外墙1
6. 15×10滴水
7. 密封膏
8. 毛石挑檐（与过梁同宽）
9. 20厚防水砂浆
10. 棚1
11. 内墙1
12. 窗帘杆
13. 15厚木制窗台板
14. 20厚聚苯填充

9

四川茂县黑虎乡壹基金自然之友小学， 是2008年“5.12”汶川地震后，由上海李连杰壹基金公益基金会资助、北京自然之友倡导与全程督办，于2010年10月投入使用的乡中心寄宿制小学。该学校秉持环境友好及文化传承的理念，遵循绿色建筑的营造策略，从规划设计、建材选择、建造方式等方面关爱环境、节约能源和循环利用资源，实现了一个可持续发展的新校园。学校将成为“自然之友”环境教育的基地，将绿色生态的理念从建筑到教育同步落到实处。

小学坐落在黑虎乡小河坝乡政府的东侧，距县城27公里。该小学为8个班寄宿制小学校，学生320人，教师24人。学校用地面积为6482.4平方米，总建筑面积为4409.04平方米。分为五个子项：教学与办公楼、学生食堂、学生宿舍、教工宿舍以及室外工程。

设计理念及特点

1. 低技术、低造价、低碳、零排放的绿色建筑理念实践

1) 当地材料及语言

a.采用当地富有的毛石和当地传统工艺砌筑围护墙体，传承传统工艺，降低建材运输成本。b.墙体采用硬泡聚氨酯及稻壳水泥胶复合保温隔热层，增强墙体安全性同时,利用稻壳等当地廉价材料增强维护结构的热惰性。 c.采用当地加工的木质双层中空玻璃窗，减少热量的散失。

2) 能源整合与节能指标

a.采用设在教师宿舍屋顶上的太阳能集热系统，为学生提供洗浴热水及厨房的部分热水。 b.采用太阳能光电技术，为学校补充照明电力。c.考虑到当地有廉价的水电，设计预留了电暖气的电源和位置，并为厨房预留了电磁炉的电源，满足未来发展需要。d.经测算，该小学建筑能耗为每年30kwh/m^2。

3) 废弃物排放与利用

a.利用震后拆除旧建筑的砖石，作为建筑地面的回填材料。b.建设沼气化粪池，为厨房提供部分燃料，为农家提供沼液和有机肥。c.部分尿液收集，为附近农家提供高效有机肥料。 d.垃圾分类收集，其中厨余垃圾、落叶及其他有机物进入沼气化粪池作为产生沼气的原料。学生参与分类收集，体验自然循环。 e.建有三片小型生态湿地，处理日常生活污水，洗手、洗澡废水

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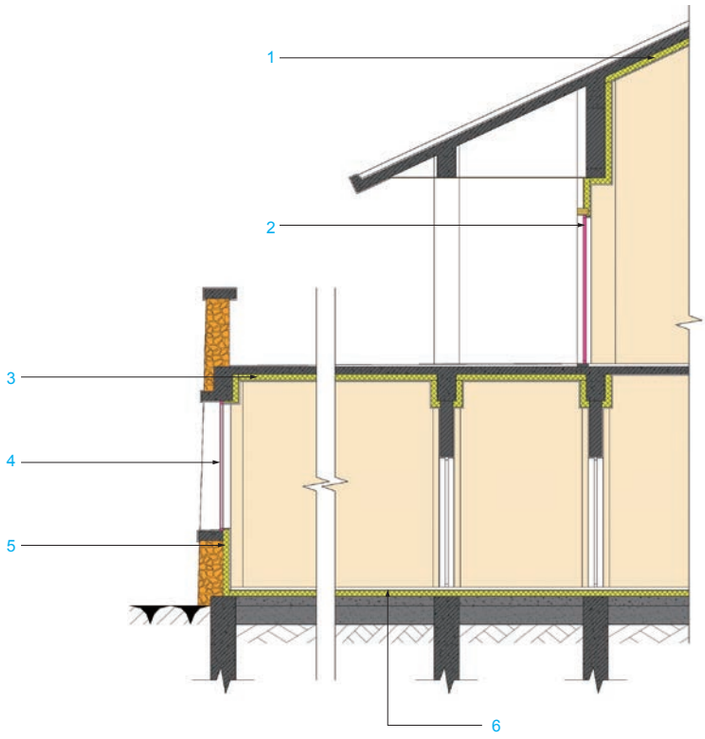
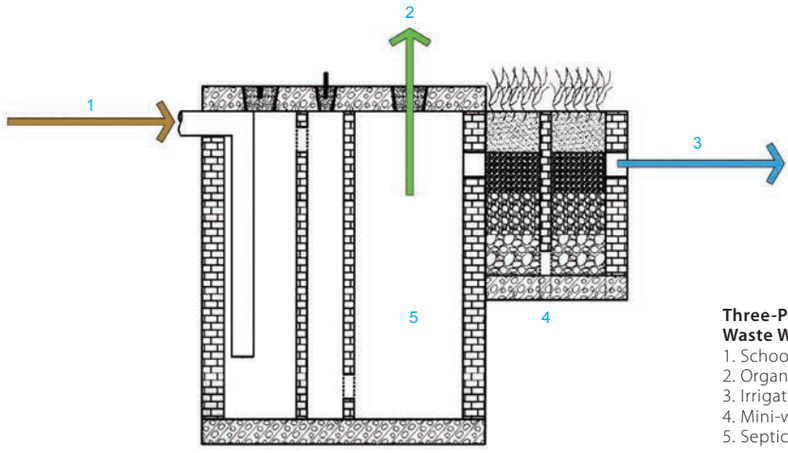
11. Terrace for various activities
12. Teaching Building close-up view
13. Space for activities at break time
14. Veranda with columns wrapped by straw ropes
11. 不断变换内容的活动平台
12. 教学楼的细节
13. 课间活动场所
14. 缠有草绳的柱廊

11



Use of Cheap Local Materials:
1. Roof thermal insulation, 100mm rice husk ash
2. Door and window thermal insulation, wooden door
3. Roof thermal insulation, 100mm rice husk ash
4. Door and window thermal insulation, double glazing window
5. Wall thermal insulation, 100mm rice husk ash
6. Floor thermal insulation, 100mm rigid polyurethane foams

当地廉价材料利用:
1. 屋顶保温，100厚稻壳灰
2. 门窗保温，保温木门
3. 屋顶保温，100厚稻壳灰
4. 门窗保温，双层玻璃窗
5. 墙体保温，100厚稻壳灰
6. 地面保温，100厚硬泡聚氨酯

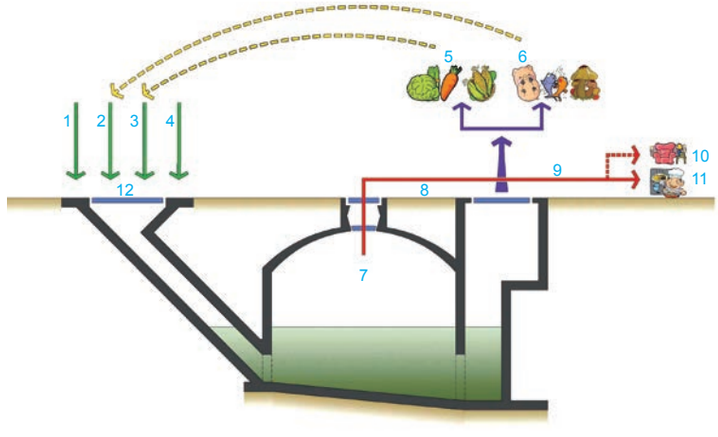


Three-Part Septic Tank + Mini-Wetland Waste Water Treatment:
1. School sanitary waste
2. Organic fertilizer
3. Irrigation or discharge
4. Mini-wetland
5. Septic tank

三格化粪池+小型湿地污水处理系统:
1. 学校生活污水
2. 有机肥料
3. 浇灌或排放
4. 小型湿地
5. 化粪池

Methane Tank - Providing Fuel for School Kitchen and Promoting Eco-Agriculture:
1. Human excrement
2. Cattle excrement
3. Straw
4. Other organism
5. Eco-agriculture
6. Cultivation
7. Septic tank
8. Outlet
9. Methane fuel
10. Residents in the neighbourhood
11. School kitchen
12. Input

沼气池技术——沼气池提供学校厨房燃料，促进生态农业:
1. 人粪便
2. 牲畜粪便
3. 秸秆
4. 其他有机物
5. 生态农业
6. 养殖业
7. 沼气池
8. 出料口
9. 沼气燃料
10. 周边居民
11. 学校厨房
12. 进料口



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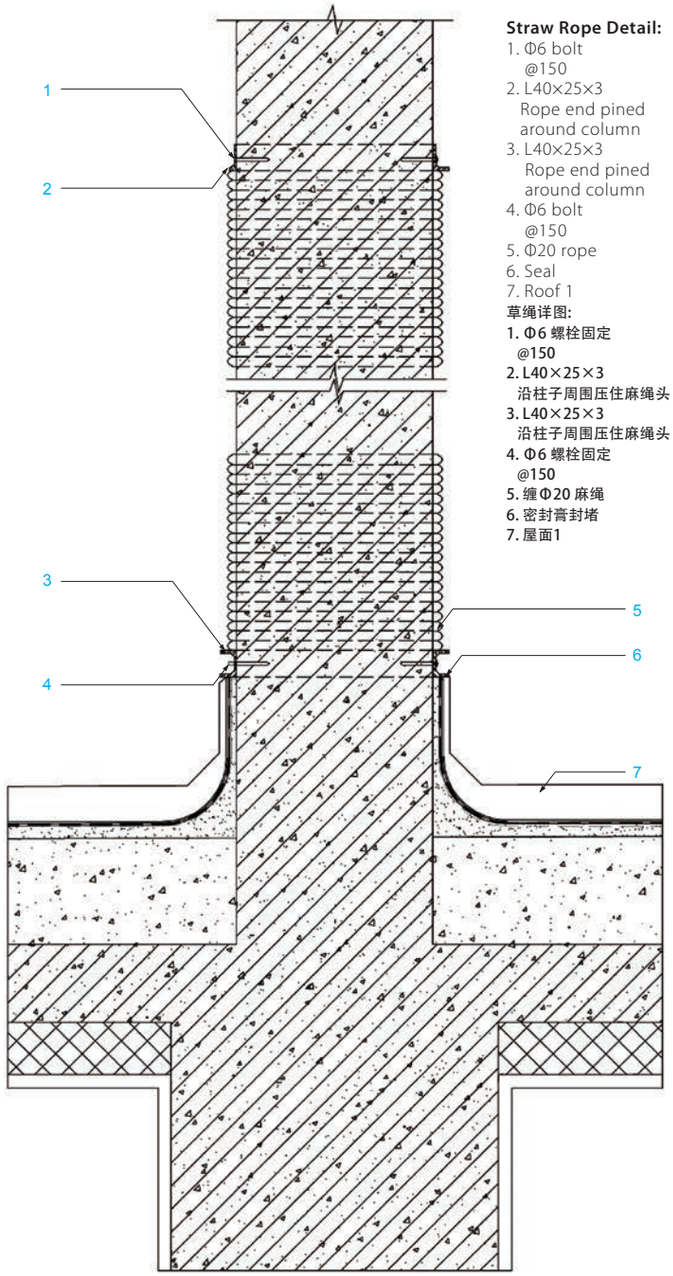
及厨房经隔油处理后的废水，排入校园生态湿地，做到污水无害化排放，并形成学校特有的生态景观。 f.建有小型生态水池，供学生研究水质及水生植物，并进一步净化废水。学生参与种植与维护，体验自然净化过程。 g.厨房排气净化处理后排放。减少对空气的污染。h.屋面雨水收集，提供庭院洒扫用水和树木灌溉用水，学生参与水的循环利用。i.庭院铺装材料选用渗水砖，涵养地下水源。

4) 节能设备 a. 采用节能灯具和荧光灯具，不用白炽灯。b. 采用节水型卫生洁具和龙头。c.采用太阳能灯具作为庭院照明。

5) 社会层面可持续发展

a.运用传统砌筑材料（毛石）和砌筑工艺，延续当地特有的手工艺。b.开放式校园，学校的图书室对村民开放，多功能教室可以培训村民。c.坚固的校舍成为当地居民应急避难的场所。d.低造价的乡村绿色学校。该小学总造价978.5万元，每平方米2219元，成功的预算控制成为设计的一项成果。建筑造价几乎全部用于建筑安全及性能的改进。学生座椅为旧学校座椅，循环使用。灾后重建及交通困境导致所有建材费用上涨，实际造价比预算多16%, 太阳能光电板由厂家捐助。



Straw Rope Detail:
1. Φ6 bolt @150
2. L40×25×3 Rope end pined around column
3. L40×25×3 Rope end pined around column
4. Φ6 bolt @150
5. Φ20 rope
6. Seal
7. Roof 1

草绳详图:
1. Φ6 螺栓固定 @150
2. L40×25×3 沿柱子周围压住麻绳头
3. L40×25×3 沿柱子周围压住麻绳头
4. Φ6 螺栓固定 @150
5. 缠Φ20 麻绳
6. 密封膏封堵
7. 屋面1

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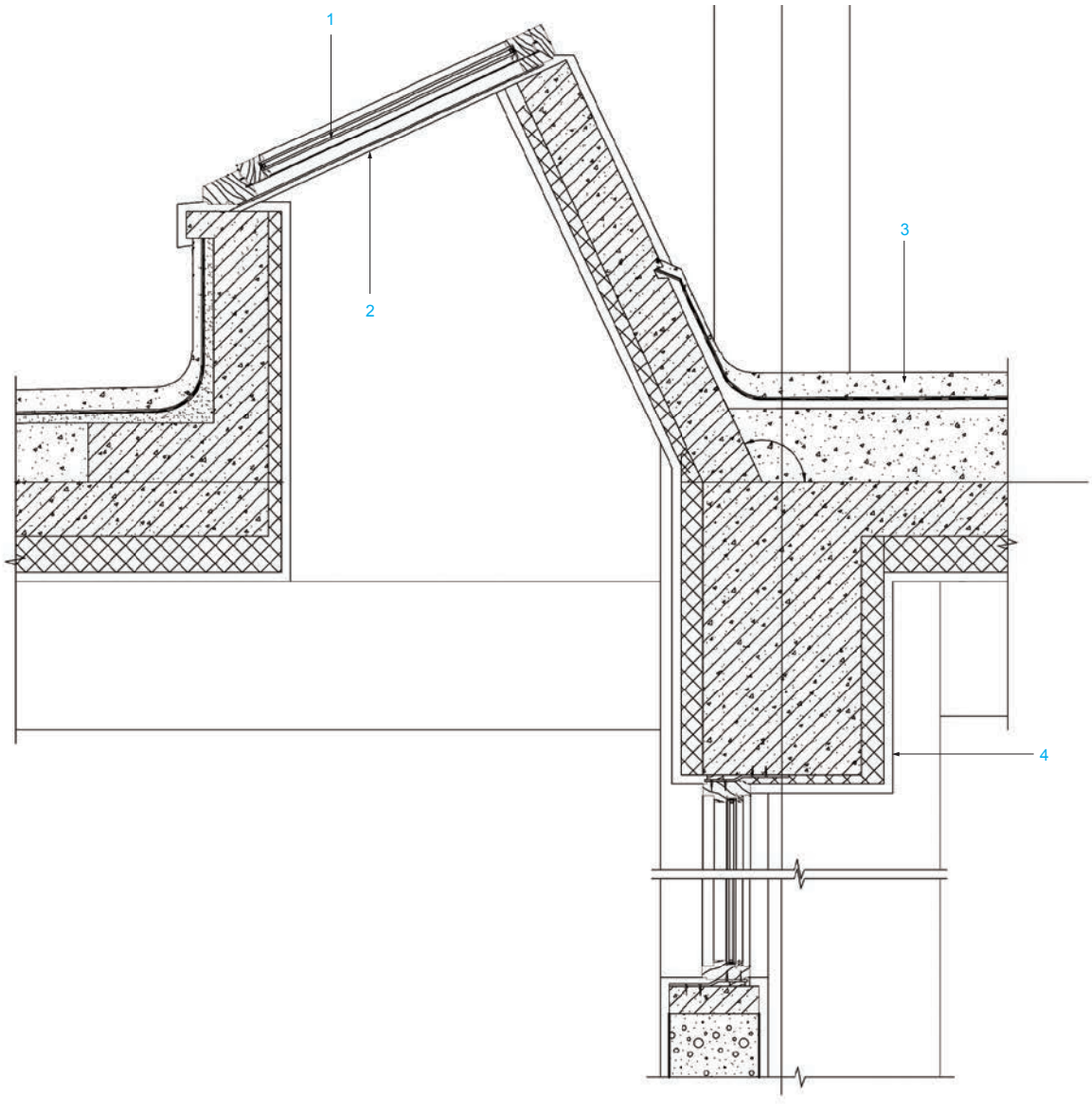

Skylight Detail:
1. 5mm wire glass
   12mm air space
   5mm tempered glass
2. Steel wire mesh
3. Roof 1
4. Interior wall

天窗详图：
1. 5厚夹丝玻璃
12厚空气层
5厚钢化玻璃
2. 钢丝网
3. 屋面1
4. 内墙

黑虎小学设计通过对“绿色建筑”的营造，实现了低技术、低造价、低碳、零排放的生态目标，使环境教育可以从身边做起，融入校园生活，为黑虎乡未来的可持续教育奠定了基础。通过对传统建筑语言的传承、更新和发展，树立了民族文化自信，为羌族地区魅力家园重建提供了可持续发展的实例。全过程体制内建造，推动了国家政策程序的地方性落实。

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如果一所学校有安全、亲切的校舍，有生动自然的校园，是环境中和谐的一员，有城乡知识的交流，有“羌”民族文化的自信与尊严，这所学校就有了“生命”和“灵魂”，才有机会成长出一个有感情、有责任、追求进步的校园，一个有希望的校园，一个可以留下记忆的校园！希望黑虎小学的努力能成为一个小小的例子，让中国的每一方土地都可以思考如何“以自己立足的方式”进步和成长。

2. 黑虎小学设计特点

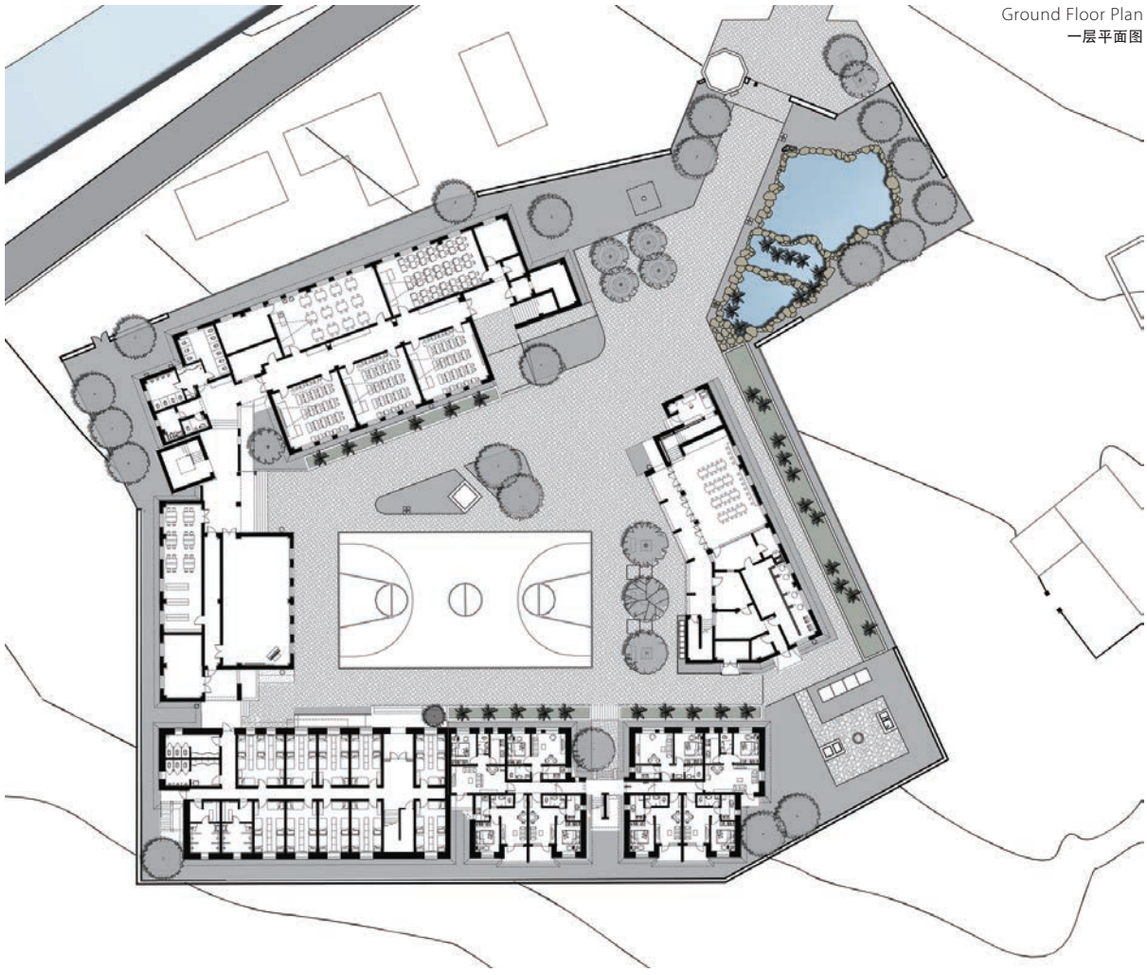
1) 将学校体量划分为类民居的功能块，但又相互联系，以组落的方式融进村镇之中。设置符合当地气候及地域特征的空间组合。

2) 该建筑场地所在的黑虎乡小河坝村，是极具传统“羌”文化特色的村寨，山坡上近邻的黑虎羌寨为羌族著名的文物级村寨。黑虎小学提取当地民居的建筑及材料语言，加以简化和发展，融合当下建筑技术，希望在传承地域文化的前提下，启发土地基于自身发展的诚挚思考。

3) 解决了当地建筑材料（毛石砌体）与灾后8度抗震设防构造之间的矛盾。通过内置构造柱及分布的钢筋网片等手段，弥补建材松散的问题。以“与灾难共生”的态度面对校园安全，校园同时可以成为村民避难的场所。

4) 注重多层次人性化场所的设置。总图考虑到山区阳光和风的方向，让校园充满阳光。在设计流线时注意在功能块间设置有遮蔽的廊道，完成全天候的庇护。因用地狭小，设计中利用屋顶平台，二层上课的学生在课间不用下楼，就有活动和交往空间。设计还改变了传统乡村小学在校园角落设置集中式旱厕的习惯，在教学和居住的不同功能块中，就近设置了方便的水冲厕所。首层采用坡道等无障碍设施取代台阶，卫生间和浴室均有无障碍设施。波形盥洗槽能适应不同身高的学生。

Ground Floor Plan
一层平面图

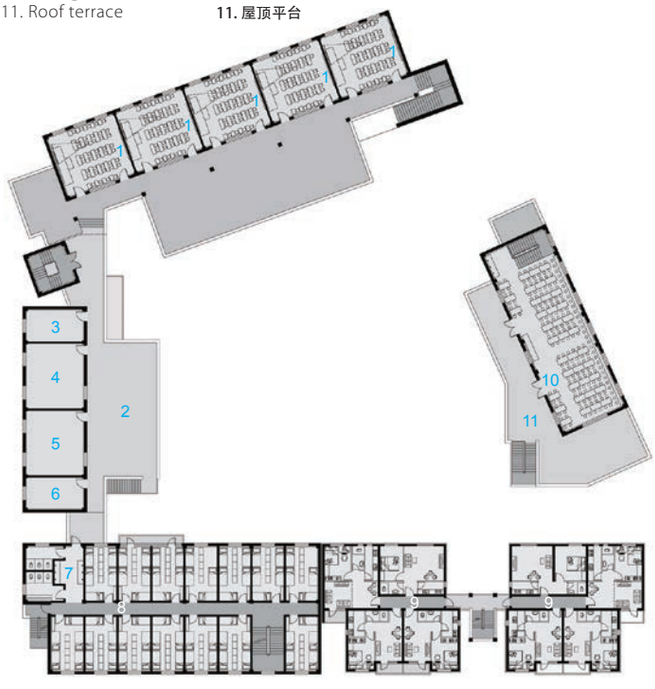


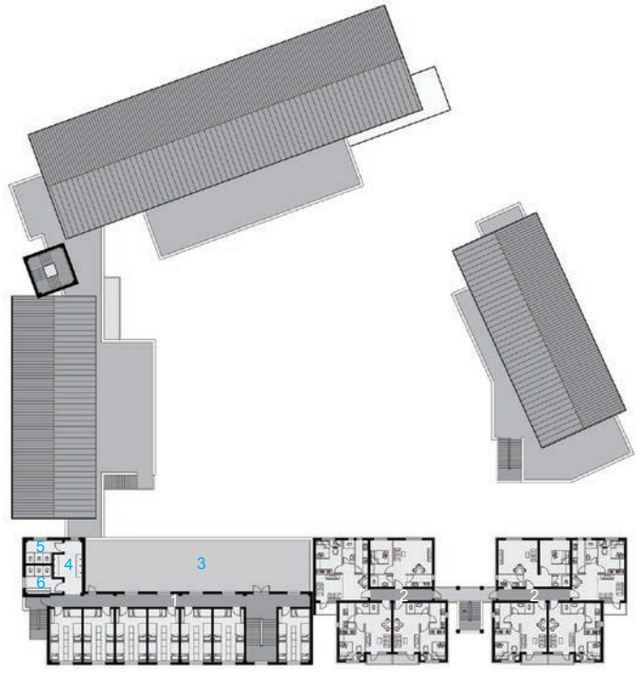
First floor plan (Below):
1. Classroom
2. Activity terrace
3. Science activity room
4. Teaching office
5. Meeting room /teachers' library
6. Political affairs office
7. Washroom
8. Students dormitory
9. Teachers dormitory
10. Dining hall
11. Roof terrace

二层平面图（下图）：
1. 普通教室
2. 活动平台
3. 科技活动室
4. 教学办公室
5. 会议室 /教室阅览室
6. 党政办公室
7. 盥洗室
8. 学生宿舍
9. 教室宿舍
10. 餐厅
11. 屋顶平台

Second Floor Plan (Below):
1. Students dormitory
2. Teachers dormitory
3. Roof terrace
4. Washroom
5. Female toilet
6. Male toilet

三层平面图（下图）：
1. 学生宿舍
2. 教室宿舍
3. 屋顶平台
4. 盥洗室
5. 女厕
6. 男厕





ECO PRIMARY SCHOOL AT MAOSI VILLAGE

Qingyang City, Gansu Province
WU Enrong, MU Jun

毛寺生态实验小学

甘肃省 庆阳市 西峰区 显胜乡 毛寺村
吴恩融 穆钧

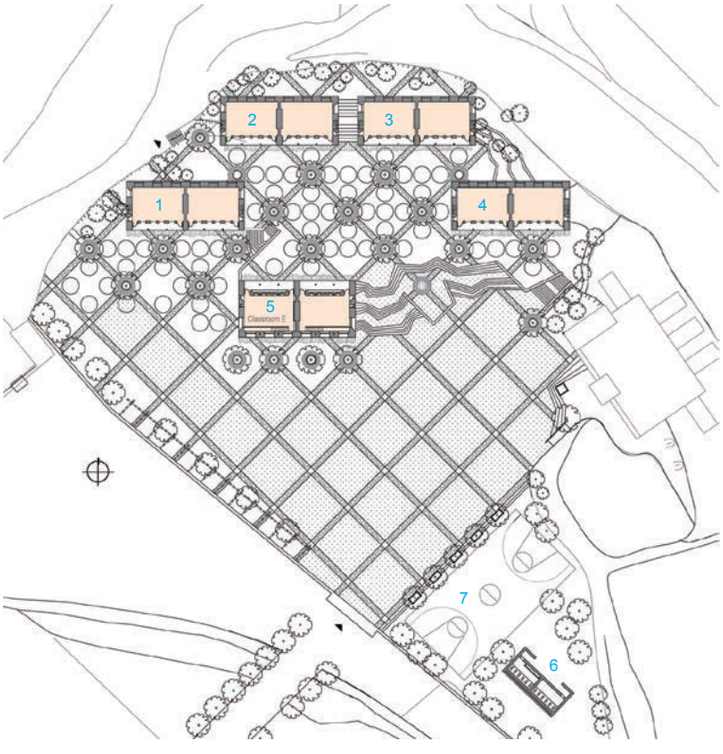
Gross Floor Area: 1,006m^2
Design/Completion Time: 2004-2006/2007
Architect: WU Enrong/School of Architecture, The Chinese University of Hong Kong (CUHK); MU Jun/ School of Architecture, Xi'an University of Architecture and Technology
Photographer: MU Jun
Client: Education Bureau of Xifeng District
Cost: 728,000 RMB (515 RMB/m^2 for classrooms)
建筑面积：1006平方米
设计/建成时间：2004-2006年/2007年
建筑设计：吴恩融/香港中文大学建筑学院；穆钧/西安建筑科技大学建筑学院
摄影师：穆钧
项目委托：西峰区教育局
工程造价：72.8万元人民币，其中教室造价515元/平方米

The famous Loess Plateau in northwest China is one of the poorest regions in the vast country, where local people face great challenges in developing eco architecture because of the backward in economy and technology. The Eco Primary School at Maosi Village completed in the summer of 2007 is an exemplary project under such circumstances. With the help from the local government, the architects, apart from designing, were also in charge of collecting donations and organising construction in the charity programme. The goal is not only to create a comfortable learning environment for the children, but also more importantly to develop a practical eco-architecture system suitable for local conditions.

This project features systematic and duplicatable design approaches, including three basic stages: analysing existing facts, experimenting with models, and designing and constructing. First of all, after fully studying local conditions such as cold winter and warm summer, limited budget and architectural resource, the traditional raw-soil building type in the locale, the architects decided to adopt the eco-friendly thermal design method to reduce the building's energy consumption and pollution in the cold winter. Meanwhile, they were greatly inspired by the local natural raw-soil architecture (cave dwelling). The conception and construction of the school should basically abide by four principles: comfortable interiors, minimum energy consumption and pollution, low cost, and easy construction. Based on these principles, the architects used the classrooms as a model, on which they applied the TAS software to make thermal experiments. They selected from – and sometimes optimised – local regular and natural materials, traditional building techniques and eco-design systems, and found that the very basic building technique – heat accumulator and heat insulator with raw soil and other natural materials – is the most economic and effective solution to improve architectural thermal performance and to reduce energy consumption and pollution. Therefore, this building technique is applied to the design of the classrooms.

According to the site, the ten classrooms are composed of five units located on two terraces with different levels, each classroom being able to have maximum natural light and ventilation in summer. The courtyard with ample greenery helps create an enjoyable environment for the children. The form of the classrooms is derived from the local traditional wooden-structure residence with pitched roofs. Hence, the anti-seismic property of wooden structures is preserved, while construction is comparatively easy for the villagers. The classrooms on the north are embedded into the terrace. In this way, sufficient daylight from the south is guarantied while heat loss in winter is effectively minimised. Thick adobe walls, traditional roofs with insulation layers, double-glazing… These heat accumulators and heat insulators are helpful to withstand the harsh weather and maintain the interiors warm and cosy. In addition, some openings are specially adjusted to maximally bring in natural light.

The construction of the school is done in accordance with local conventions – all the builders are Maosi villagers and all the construction work is completed with common farm tools, except for excvavtors used in rough grading. Besides, most of the materials are locally obtained, such as adobe, thatch and reed. Because these raw materials are renewable, all the leftover bits and pieces could be re-used immediately after simple processing. For example, the adobe is made from the loess excavated from the ground; adobe pieces could be mixed with ryegrass as a kind of cement; the leftover pieces of wood could be used in walls and other facilities in the school. In this way, the architects appropriately exercised local architectural wisdom, successfully reducing energy consumption and pollution caused by the construction.



1. A glimpse of the basketball playground
2. School buildings
3. Bird's-eye view

1. 篮球场一瞥
2. 校园建筑全景
3. 校园鸟瞰图

Site Plan (Left):
1. Classroom A
2. Classroom B
3. Classroom C
4. Classroom D
5. Classroom E
6. Eco-toilet
7. Basketball court

总平面图（左图）：
1. 教室A
2. 教室B
3. 教室C
4. 教室D
5. 教室E
6. 生态厕所
7. 篮球场

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The new classrooms are very low-cost, with only 515 RMB per square metre, surprisingly lower than local schools built with clay bricks and concrete. The classrooms have been put in use for a year, and they are proved to have a better thermal performance than other local schools. The classrooms remained warm and fresh without burning any fuel in the rarely cold winter.

From the effect in use, the architects concluded three points. Firstly, the new school is a comfortable and pleasing learning environment for children. The architecture surpasses local buildings in terms of thermal property, energy saving and environmental protection. Secondly, many villagers are employed in the construction, who benefited from the charity project. Lastly, and more importantly, they got a chance to know more about their tradition. The primary school points out a new way to develop eco-friendly architecture in the Loess Plateau region. As proved, with a limited budget, the villagers could use their familiar traditional techniques and locally available natural materials to improve their living conditions and at the same time maximally reduce environmental pollution, eventually realising a harmonious relationship between human, architecture and nature. The project report has been written up, ready for publication and propaganda in the future, but the architects' work has not finished. They will further their research in eco-friendly architecture, not only for the primary school, but more importantly for the future architecture in the region.

"From now on, we don't need to burn coal for heating in our school. The money saved could be used to buy children more books," said The headmaster of Eco Primary School at Maosi Village.

4. Front view
5. Reed laying of the roof
6. Steps at the square
7. Square overview
8. Square view

4. 校园正面
5. 屋顶用芦苇铺设
6. 广场的阶梯
7. 广场全景
8. 广场局部

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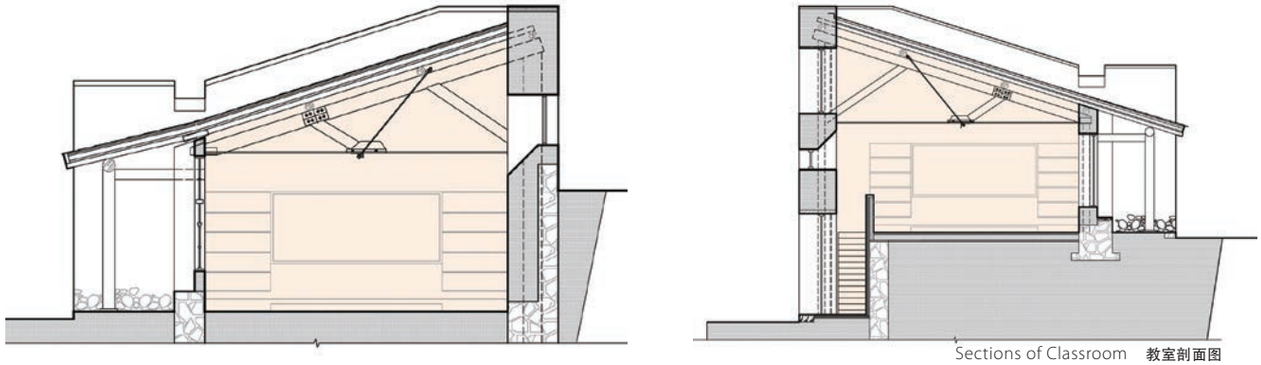

Sections of Classroom 教室剖面图

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地处西北的黄土高原是中国最为贫困的地区之一，经济与技术水平的落后是当地生态建筑发展所面临的最大挑战。2007年夏于甘肃省毛寺村新近落成的小学校正是在此背景下所进行的示范性研究成果。这是一个在当地政府的支持下，由香港中文大学建筑学院与西安建筑科技大学建筑学院共同负责设计、筹集捐款与组织施工的慈善项目。其目标不仅仅是为当地的孩子们创造一个舒适愉悦的学习环境，更关键的是要以此为契机，努力诠释一个适合于当地发展现状的生态建筑模式。

该项目强调一个科学化且可推广的设计与研究方法，其中包含三个基本阶段：现状调研与分析、模拟实验研究及设计与施工建造。首先，根据对当地冬季寒冷夏季温和的气候特点、有限的经济和建筑资源水平、以生土建筑为代表的传统建筑等方面的研究发现，在这一地区针对冬季的热工设计是减少建筑能耗和环境污染最有效的生态设计手段。而当地以生土窑洞为代表的传统建筑中蕴含着大量基于自然资源并值得生态建筑设计借鉴的生态元素。与此同时，学校的设计与建造需要遵循四个基本原则：舒适的室内环境、能耗与环境污染的最小化、造价低廉与施工简便。以此为基础，建筑师利用教室为模型，借助TAS软件进行了一系列计算机热学仿真实验。通过对当地所有常规和自然材料、传统建造技术和生态设计系统的筛选与优化，建筑师发现最基本的建造技术——以生土和其他自然材料为基础的建筑蓄热体与绝热体的使用，是提升建筑热特性、减少能耗和环境污染最为经济和有效的措施，因此应充分地运用在学校教室的设计之中。

顺应所处的地形，学校的10间教室被分为五个单元，布置于两个不同标高的台地上，使每间教室均能获得尽可能多的日照和夏季自然通风。以绿化为主的院落有助于创造一个舒适愉悦的校园环境。教室的造型源于当地传统木结构坡屋顶民居，不仅继承了传统木框架建筑优良的抗震性能，而且对于村民而言更容易建造施工。教室北侧嵌入台地，可在保证南向日照的同时，有效地减少冬季教室内的热损失。宽厚的土坯墙、加入绝热层的传统屋面、双层玻璃等蓄热体或绝热体的处理方法极大地提升了建筑抵御室外恶劣气候的能力，维护室内环境的舒适稳定。同时，根据位置的不同，部分窗洞采用切角处理，以最大限度地提升室内的自然采光效果。

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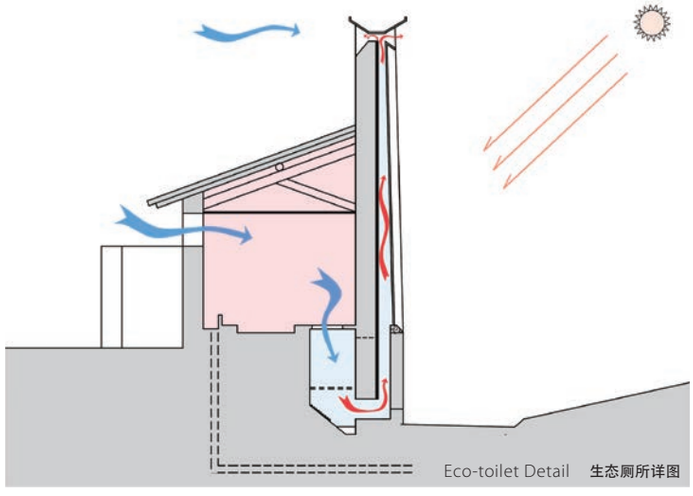
9. West view
10. Exterior view of the classroom
11. South veranda
12, 13. Interior
14, 15. Eco-toilet
16. Windows of the classroom
17. New personal space for children
9. 从西面看校园
10. 教室外景
11. 南侧门廊
12, 13. 教室内
14, 15. 生态厕所
16. 教室开窗
17. 孩子们有了自己的小空间



Eco-toilet Detail **生态厕所详图**

小学的建设施工继承了当地传统的建造组织模式，施工人员全部由本村的村民组成。除平整土方所必须的挖掘机以外，所有施工工具均为当地农村常用的手工工具。同时，绝大部分建筑材料都是“就地取材”的自然元素，如土坯、茅草、芦苇等。由于这些材料所具有的“可再生性”，所有的边角废料均可通过简易处理，立即投入再利用。例如，土坯是由地基挖掘出来的黄土压制而成，而土坯的碎块废料又可混合到麦草泥中作为粘接材料。再如，剩下的椽头与檩头可再利用到围墙和校园设施建造之中。以上措施不仅有助于最大限度地挖掘当地传统的建筑智慧，而且可以将由于施工而导致的能耗与对环境的破坏最小化。

新教室的造价只有515元/平方米，远低于当地由粘土砖和混凝土建造的常规学校建筑。而根据对教室在过去一年使用过程中的观测发现，与当地常规的学校建筑相比，新建教室的室内气温始终保持着相对稳定的状态，可谓冬暖夏凉。即便碰上罕有的严冬，无需任何燃料采暖，教室仍可达到舒适且空气清新的室内环境。

从建成的效果来看，总体而言，有三点值得强调。首先，新学校为孩子创造了一个舒适、宜人的学习环境。在热工性能、能源消耗与环境保护方面，其生态可持续效能远优于当地常规的建筑；其次，由于施工建造大量地雇用了当地的村民，作为慈善项目，除了学校本身绝大部分的社会捐助得以惠及该村；更重要的是，从这个学校项目中，村民们得以重新认识自己的传统。新学校的建造向他们诠释了一条适合于黄土高原地区发展现状的生态建筑之路。在有限的经济基础下，村民可以利用所熟知的传统技术和随地可得的自然材料，在改善自身生活条件的同时，最大限度地减少对环境的污染和破坏，实现人与建筑、自然的和谐共生。该项目的总结报告已初步完成，以供未来的出版和推广。而建筑师的工作还将继续下去，不仅仅是为了一座学校，而是为整个该地区生态建筑的发展进行更加有意义的研究与示范。

最后，引用毛寺生态实验小学校长的一句话：“从现在开始，学校不再需要烧煤来取暖了，省下来的钱可以为孩子们多买一些书了。”

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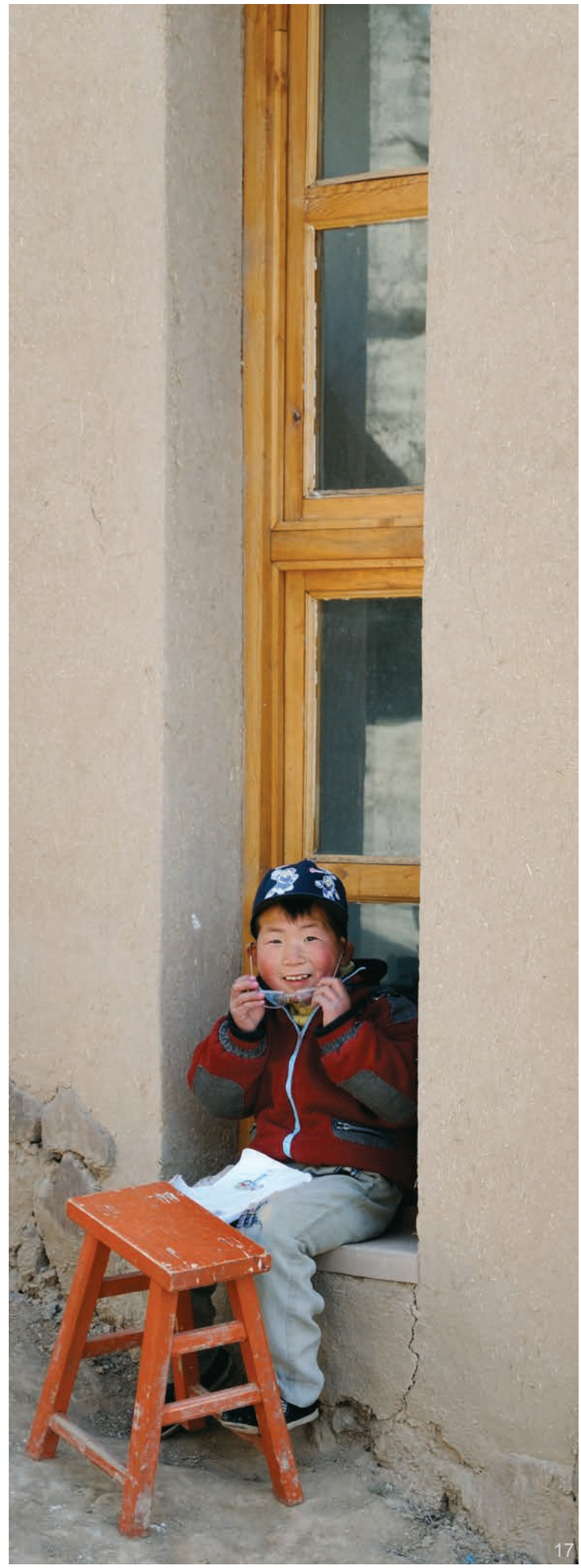


17

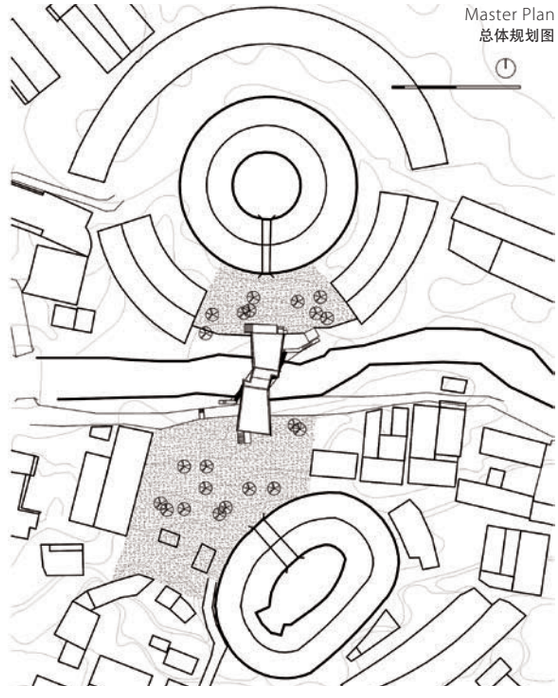
BRIDGE SCHOOL
Pinghe County, Fujian Province
LI Xiaodong / Li Xiaodong Studio

桥上书屋
福建省 平和县
李晓东/李晓东工作室

Site Area: 1,550m²
Gross Floor Area: 240m²
Construction Period: 2008-2009
Architect: LI Xiaodong
Design Team: CHEN Jiansheng, LI Ye, WANG Chuan, LIANG Qiong, LIU Mengjia, NIE Junqi
Collaborator: Hedao Architecture Design, Xiamen, Fujian
Main Materials: Steel (structure), wood (interior & grid), concrete (base)
Client: Xiashi Village
Awards: AR Emerging Architecture Awards Winner, 2009
占地面积：1550平方米
建筑面积：240平方米
建造时间：2008-2009年
建筑设计：李晓东 / 李晓东工作室
设计团队：陈建生，李烨，王川，梁琼，刘梦佳
施工图纸：福建厦门合道建筑设计有限公司
项目委托：平和县下石村
主要材料：钢（结构）、木材（内装与格栅）、混凝土（基座）
所获奖项：2009年英国AR新锐建筑奖

The Bridge, the School, the Playground and the Stage
Located at a remote village, Fujian Province, China, the project not only provides a physical function – a school + a bridge, but also presents a spiritual centre. There's a local legend saying that the two castles in the village used to be enemies and thus built a creek in between. The Bridge School connects the two castles across the river. The main concept of the design is to enliven an old community (the village) and to sustain a traditional culture (the castles and lifestyle) through a contemporary language which does not compete with the traditional, but presents and communicates with the traditional with respect. It is done by combining a few different functions into one space – a bridge which connects two old castles cross the creek, a school which also symbolically connects past, current with future, a playground (for the kids) and the stage (for the villagers).

A lightweight structure traverses a small creek in a single, supple bound. Essentially, it is an intelligent contemporary take on the archetype of the inhabited bridge. Supported on concrete piers (which also has the function of a small shop), the simple steel structure acts like a giant box girder that' s been slightly dislocated, so the building subtly twists, rises and falls as it spans the creek. The colour of earth yellow is perfectly integrated with that of the castles, whose circular shape sharply contrasts with the rectangular structure, creating continuity and harmony.


Master Plan
总体规划图

1

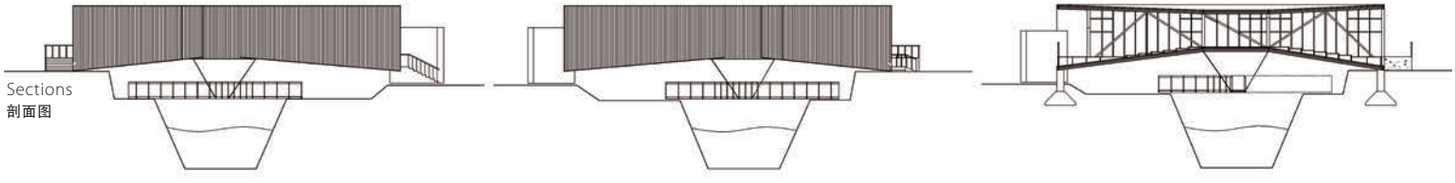
2

The unique archetype of castle reveals the culture the ethnic group, especially their past of defensive living and homeless life. Such a culture has cumulated rich legacy and unique appeal for the village. Meanwhile, it also caused the close-castle lifestyle for each family, refusing outsiders. In between the castles there are usually mud lands, hard to stand on, which lead to the lack of public space for communication. A primary school perhaps would bring some changes to the primordial spatial system. The particular site of the building gave the architect the initial idea – a bridge connecting the two castles across the creek.

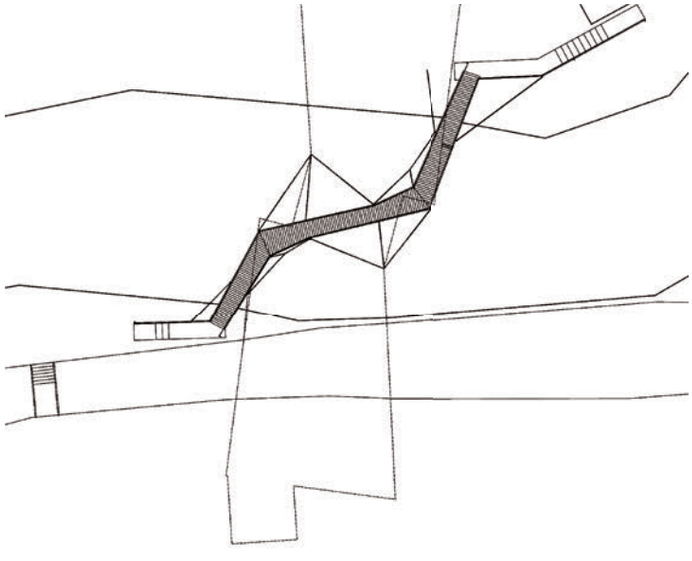
Inside are a pair of almost identical, wedge-shaped classrooms, each tapering towards the mid point of the structure (which holds a small public library). Although it's possible to use the building as a bridge, a narrow crossing suspended underneath the steel structure and anchored by tensile wires offers an alternative and more direct route. Both ends of the building are equipped with sliding and folding doors, making the spaces outside of the classrooms become stages for the villagers. The classrooms are used as performing platforms after class so as to makes a functional and formal link between the castles, as well as reorganising the surroundings and providing a public square for the village. On one side of the square is the circular, crude castle, while on the other side sit the well-defined stages – the contrastive dialogue between the two sides makes the space full of tension. At dusk and at night, active villagers gather here. Catalysing a sense of history, the project is more than just a school, but a social centre of the entire village.

Architecture built in a historical context is liable to suffer two extremes: one is to extensively adopt modern technologies, and the other is to highlight the primordial feel with a nostalgic atmosphere. In the Bridge School project, the architect didn't stick to local materials, and sought to find a solution between the two extremes, one that uses a modest yet contemporary architecture language. Steel structure is adopted for the building, and the entire interior is used mainly as two classrooms. For the exterior skin, wooden grid (size 10×15×20) is adopted in order to protect the interior views not to be interfered by passers-by, as well as to bring in

Sections
剖面图



1. Bridge School with a box structure
2. Connection between the two castles
3. Steel bridge under the Bridge School
1. 书屋是方筒式的建筑
2. 桥上书屋连接着两座土楼
3. 书屋下方的钢桥



the beautiful creek scenery outside. Physical lightness and spatial fluidity are keys. The steel frame is wrapped in a veil of slim timber slats, which filter light and temper the interior with cooling breeze. Underneath this structure is a zigzag public bridge, which would not conflict with the two squares at both ends. The modest yet contemporary language creates a poetic space without big volume or showy details. With an assurance that belies its rustic setting, the new building also acts as a foil to the mass and weight of the neighbouring historical structures.

The castle community has old and regular spaces. On such a "Tabula Rasa" formed with a long history, the Bridge School acts as a kind of interference. The architect tries to solve the contradiction between the closed living system and modern lifestyle by setting a structure with modern architecture language amongst the old traditional buildings, hoping to enliven the village with refreshing vigour. In this sense, the Bridge School surpasses the basic function of a primary school, and further enriches spatial diversity of the village. The architect said that the essence of architectural design is the same as traditional Chinese medical science in which we adjust the body system to cure illness, instead of directly aiming at the illness itself. Comparing the Bridge School with Yuhu Primary School in Lijiang, a previous project of the architect, we could clearly see the totally different objectives and the same concern about environment. The Yuhu project became a model for local architecture, while the Bridge School mainly aims at providing structurally efficient public space for the community. Rural areas in China are currently welcoming the era of "New Villages" and buildings in the countryside are attracting more and more attention. Nevertheless, quintessentially it is rural community and lifestyle that we should really pay close attention to. Perhaps the Bridge School provides a new perspective to the building of New Villages in China.

4

一座桥梁，一所学校，一个操场，一处舞台……

平和县下石村的中心有两个圆形土楼，中间横跨一条溪水，传说旧时两个土楼的家族互为仇敌，遂划渠为界，互不往来。李晓东的桥上书屋就在土楼之间，溪水之上。设计理念旨在为古老的下石村注入活力，通过现代的建筑语言使传统文化（土楼以及土楼式生活）永葆生机——这种现代的建筑语言不与传统争锋，而是带有敬意地与传统交流、融合。建筑师将四种功能融于单一空间内：一座桥梁横跨溪流，连接两座土楼；一所学校，不单履行学校的职能，更重要的是象征着过去、现在与未来的联系；一个操场供孩子们嬉戏；最后，一处舞台为住民提供活动场地。

桥上书屋以细密的桉树木条包裹方筒式的建筑，横亘于溪水上，下方用钢索悬吊着一座轻盈的折线形钢桥。钢桥采用混凝土柱子支撑，桥下空间同时也用作小商店。这种结构以现代的方式巧妙地借鉴了下石村的建筑形式。轻盈的建筑结构悬于溪上，仿佛轻微脱位的关节，随着人的运动而发生扭动。土黄的颜色与土楼相融在一起，强烈的方圆对比由此显得柔和而贴切。

从土楼这种独特的集合住宅形式，可以读取到客家聚落历史上的宗族中心文化、强烈的内向防御性和颠沛流离的往事。这种内向的传统文化赋予该村安静的韵味和丰厚的文化遗产，在其影响下使整个下石村村落形成每户封闭独立的格局。住宅之间的场地往往是泥地，平时难以落脚，整个乡村社区缺乏交流空间和形成精神凝聚力的场所。一个希望小学或许能够为优化这种原发的空间系统带来契机。“一座桥”，这个地段给李晓东带来最初的灵感——一座跨越溪水连接两个土楼的桥。

援建下石村的希望小学只有两个班，功能非常简单：两个阶梯教室，一个小图书馆。建筑师将三个功能块全部安置在桥上，教室单侧的走廊通向中间的图书馆，两个教室在两端，分别朝向两个土楼。教室和图书馆可以作为桥梁使用，不过从钢结构下方的狭长空间也能通过，且更便捷。教室端头分别设计为转门和推拉门，使端墙外在课余时间成为两个可以为住民服务的舞台。上课时用作黑板和讲台，放学期间村里则在此举行木偶戏等表演性质的公众活动。建筑从功能和形式语言上为两座土楼创造了连接，同时也联系并重新组织了周边的空地，为村落提供了很好的公共广场，广场一边是圆形的带有粗糙痕迹的土楼，另一边是精致简练的舞台，对话双方的强烈对比使整个空间充满了张力。每逢傍晚和夜里，这里就聚集了村里自发活动的人群。这样的设计不仅为孩子们提供了学校教室，解决了交通联系问题，而且为整个村打造了交流的中心。

4. Panoramic view
5. Perspective
6. Slide
7. Classroom interior

4. 全景图
5. 书屋的透视图
6. 滑梯
7. 教室内部

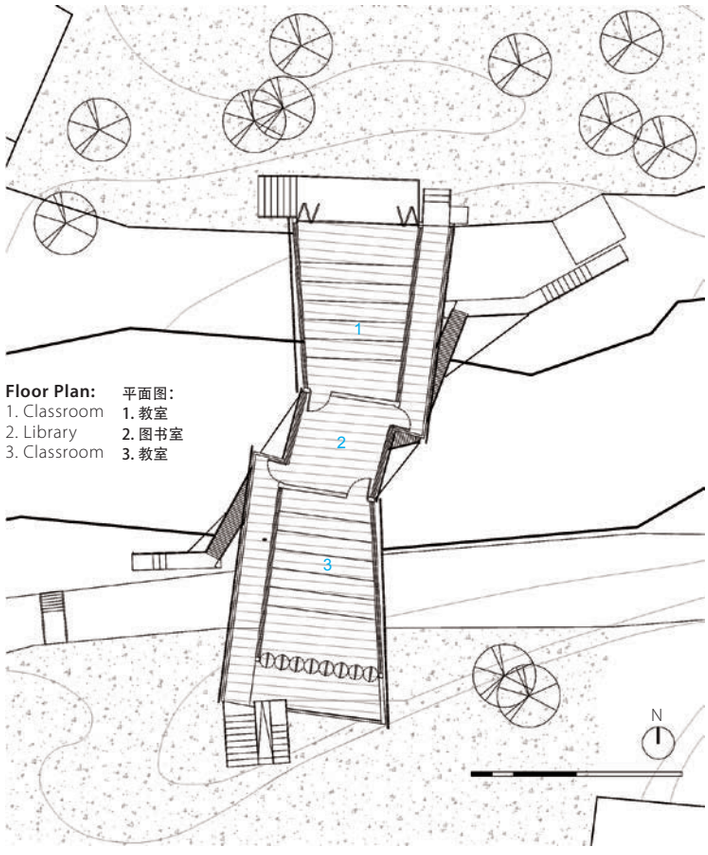
5

6

7

在传统的语境下进行建筑设计，其形式语言往往会陷入两种极端：一种是夸大并沉迷于当代技术的表现，另一种是强调原发，流连在工业化以前的怀旧情绪。在桥上书屋的设计中，李晓东没有完全拘泥于当地的材料，并且试图通过谦逊而现代的技术语言寻求一种介于两种极端之间的方式。整个建筑采取钢桁架结构，桁架内部的整体空间作为主要的教室用途。外表面采用10×15×20的木条格栅，用钢龙骨固定。如薄纱一般的表皮处理使室内的视线与行人之间不发生干扰，同时远处溪水的风景又可以畅通无阻地进入到室内。下部用钢丝悬吊过河的公共桥梁，桥梁为之字折线形，避开对两个端头广场的空间冲突，刻意避开了正对广场的方向。没有“表演性”的体量和炫技式的细节，李晓东用朴素的语言保持着他一贯的简洁和优雅。平实的现代技术语言对诗意空间的表述使整个建筑在当地创造了恰当的空间对比，形成了宜人而又令人激动的气氛。

土楼村落的社区空间古老而又匀质，在这种长期封闭的传统秩序中自我生长而形成的“白板”上，桥上书屋表达了一种点状介入的概念。其针对这种封闭体系与现代生活方式的矛盾采取了犀利的“针刺疗法”，以现代语言的建筑置于传统的村落社区空间，以精确和现代感为充满自发性和手工性质的原生空间注入了一针强心剂，试图通过刺激整个空间体系的问题关键点，使整个系统充满了新生的活力。从这个角度看，桥上书屋的设计从选址到其着眼点皆超越了小学教室的功能本身，而关注到整个村落的整体空间问题。李晓东说：建筑设计应该有如中医的理念，调和系统以治疗有病的人，而非仅仅针对疾病本身。以桥上书屋对比于李晓东以前的作品丽江玉湖完小，可以清晰地感觉到这两个建筑的着眼点完全不同，但却又同时关注到环境体系的问题。后者是为当地提供可供参考的建筑范例，前者是为聚落提供有效的结构性的公共空间。中国的农村目前恰好处于新时代的建设时期，关注正在广泛推行的新农村建设，不应止步于关注建筑本身，同时更应该关注提高农村社区的空间品质，更新农村住民的生活方式。桥上书屋这种以建筑实体来解决农村社区空间问题的案例或许可以为中国当下的新农村建设提供一个新的视角。



Floor Plan: 平面图：
1. Classroom **1.** 教室
2. Library **2.** 图书室
3. Classroom **3.** 教室

NEW BUD PRIMARY SCHOOL AT XIASI VILLAGE

Guangyuan City, Sichuan Province
ZHU Jingxiang, XIA Heng /
The Chinese University of Hong Kong (CUHK)

下寺村新芽小学

四川省 广元市
朱竞翔，夏珩 / 香港中文大学

Gross Floor Area: 437m² (Interior: 347m² ; Corridor: 180m²)
Total Volume: 1,040m³
Design/Completion Time: 2008-2009/2009
Architect: ZHU Jingxiang, XIA Heng/
The Chinese University of Hong Kong (CUHK)
Structural Engineer: KE Youlin
Capacity: 5 classrooms, 1 office, 1 toilet and 1 bathroom
System: LGS skeleton strengthened by rigid board
Comfort: A full insulated envelope + optimised daylight use + eco toilet
Sustainability: A demountable system,
paves made from recycled material
Earthquake Resistance: (Mercalli Intensity Scale) Degree X
(evaluated by Civil Engineering Department, Hong Kong University)
建筑面积：437平方米（室内面积347平方米，走廊180平方米）
建筑体积：1040立方米
设计/建成时间：2008-2009年/2009年
建筑设计：朱竞翔，夏珩 / 香港中文大学
结构设计：柯有林
项目规模：配备5间教室、一间办公室、一间卫浴的村小学
建造系统：轻钢骨架和加强板的复合结构
舒适性能：6个面系统绝热，优化的采光设计，生态厕所
可持续性：可拆卸结构，铺地采用旧材料二次利用
抗震性能：麦加烈10度（由香港大学土木学院定性测评）

Site Plan **总平面图**

The tremendous loss of life and property caused by the 5.12 Wenchuan Earthquake in 2008 reveals the absence of decent structural design and adequate monitoring of the construction process in the region. Reconstruction has been difficult and a large number of temporary shelters that are neither durable nor thermally comfortable have been built in an attempt to meet the urgent needs of those affected. These shelters, when demolished later, will give rise to new construction waste.

A research team led by Prof. Zhu Jingxiang of the School of Architecture at The Chinese University of Hong Kong (CUHK) has developed an integrated light-structure system for the reconstruction of New Bud Primary School at Xiasi Village in Sichuan's Jiange County. The old building suffered serious damage in the earthquake, so its students had to walk for an hour to attend classes in another school. With the support of the Hong Kong Dragon Culture Charity Fund and the CUHK New Asia Sichuan Redevelopment Fund, the new school was completed in just two weeks and has been in operation since September. The building is safe and durable, and the cost of construction is low. It also looks attractive and features good thermal performance and a high energy-saving capacity.

2

The primary load-bearing part of the school is a light-gauge steel frame, which is strengthened by a prefabricated panel system. These two parts are bound together by mechanical fasteners to form a strong but light composite structure. Although the wall is only 16cm thick, the system is able to resist high seismic forces. Under the protection of the outer panel and surface coating, the life of the skeleton is expected to last over 20 years.

The school features high thermal performance, thanks to the use of thermal insulation and storage materials. It also adopts a multi-layered envelope system where the position and ratio of the doors and windows are carefully designed to ensure that classrooms will be cool in summer and warm in winter. The decentralised opening system brings in enough day-light and natural ventilation, which greatly reduces energy consumption.

Additionally, the design incorporates environmental concepts by mostly using mechanical joints instead of chemical compounds to avoid toxic emission and to facilitate maintenance and disassembly in the future. A solar water heater and an eco-friendly toilet are equipped to improve rural sanitation.

The principle of sustainability is also reflected in the choice of materials. Materials dismantled from the old school are reused as paver, spacer or thermal mass. Some of the stone bases discarded by the villagers are also reused to furnish the courtyard. Besides, no other materials except cement were purchased for construction. Old bricks, stones and tiles are reused to achieve terrazzo effects in the flooring. This encourages local workers to preserve and develop their crafts, while reducing dependence on industrialised building materials.

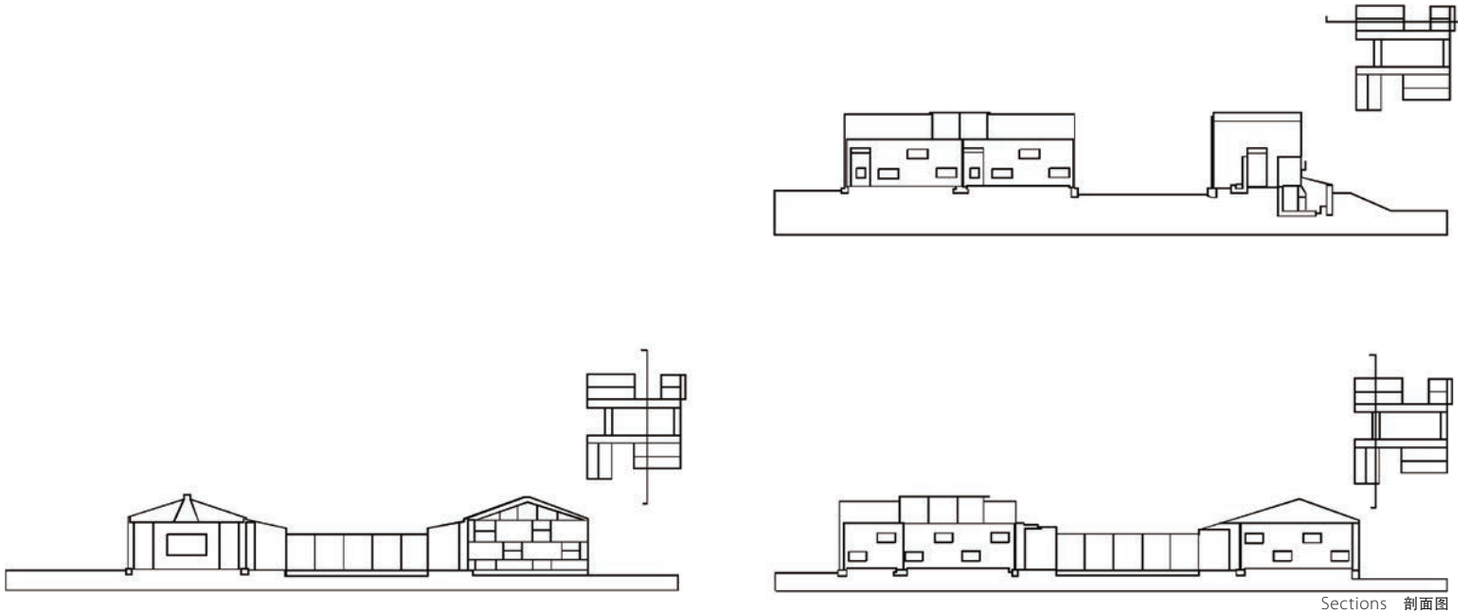
As all superstructure components are prefabricated in factories in Shenzhen and Chengdu, on-site assembly became an easy task. With the guidance of CUHK researchers, the 450-square-metre New Bud Primary School was built within two weeks. The new school comprises four single-storey buildings, a central courtyard, four standard classrooms, a multi-function hall, a teachers' office and an eco-friendly toilet.

Prof. Zhu said, "It takes many years for me to conceive, experiment and, finally, put such a light-structure system into practice. The success of the construction of New Bud Primary School demonstrates the significance of articulating research in design. The research brings about new ideas and methods, while the design transforms such ideas and methods into a building. This research has also ironed out the long-existing contradiction between construction speed and quality. It not only integrates the potential ability of different manufacturers, but also provides an opportunity to unite different communities and disseminate knowledge."

The building industry and the largest temporary house company on the mainland have shown great interest in the project. They have conducted site visits and explored the feasibility of technological collaboration. Mainland architects have also invited Prof. Zhu to lecture on the innovative design and the speedy construction of the school. In the final stage of construction, 30 volunteers including university students recruited from the mainland and Hong Kong, as well as architects, took part. This enabled them to experience innovative building technology and the symbiotic relationship that can exist between the rural and the urban.

1. Entrance square
2. Overview at dusk
3. Two classrooms along street

1. 入口广场
2. 黄昏鸟瞰
3. 黄昏近路一侧的两间课室



Sections **剖面图**

4

2008年，5·12汶川地震造成巨大的生命财产损失，反映出当地建筑结构设计的缺陷和施工过程监管的不足。重建工作困难重重，为尽快解决受灾民众的紧急需求，大量临时避难所应运而生，这些建筑物既不坚实，又不保暖。一旦过后这些避难所拆除，必将造成大量新的施工废弃物。

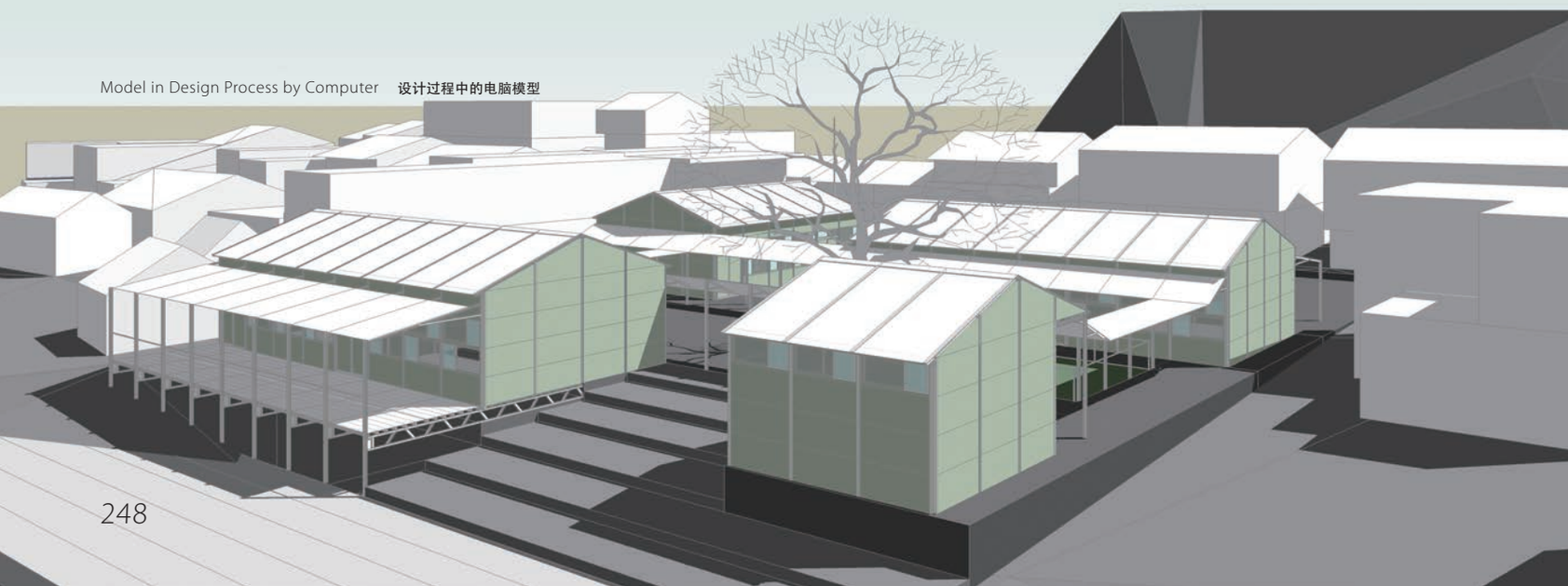
香港中文大学建筑学院教授朱竞翔带领的研究小组为四川广元市剑阁县下寺村新芽小学的重建设计了一体式的轻型建筑结构。原来的校舍在地震中遭到了严重毁坏，孩子们不得不步行一个小时到另一所学校去上课。在香港龙的文化慈善基金和香港中文大学新亚洲四川重建基金的资助下，新校舍两周内便告完工，并于9月开始启用。新校舍的建筑坚实稳固，且工程造价很低。建筑外观美观大方，保暖性能好，并且高效节能。

新校舍主要的承重部件是一个小型钢结构框架，用预制板加固。钢框架和预制板这两部分通过紧固件固定在一起，形成一个牢固而又轻盈的复合结构。尽管墙体厚度只有16厘米，但整个结构可以承受较高的地震强度。再加上外墙板和表面覆层的保护，结构框架预计寿命可达20年。

由于使用了隔热、储热材料，新校舍的保暖性能完善。在采用多层覆盖式设计的基础上，门窗位置和比例也经过精心计算，确保教室冬暖夏凉。教室采用分散开窗，充分实现自然采光和通风，减少了能源消耗。

本案还用机械连接取代化学合成，避免毒气排放，有益于维护和拆卸，体现了环保理念。采用太阳能热水器和生态厕所，改善了卫生条件。

Model in Design Process by Computer　设计过程中的电脑模型



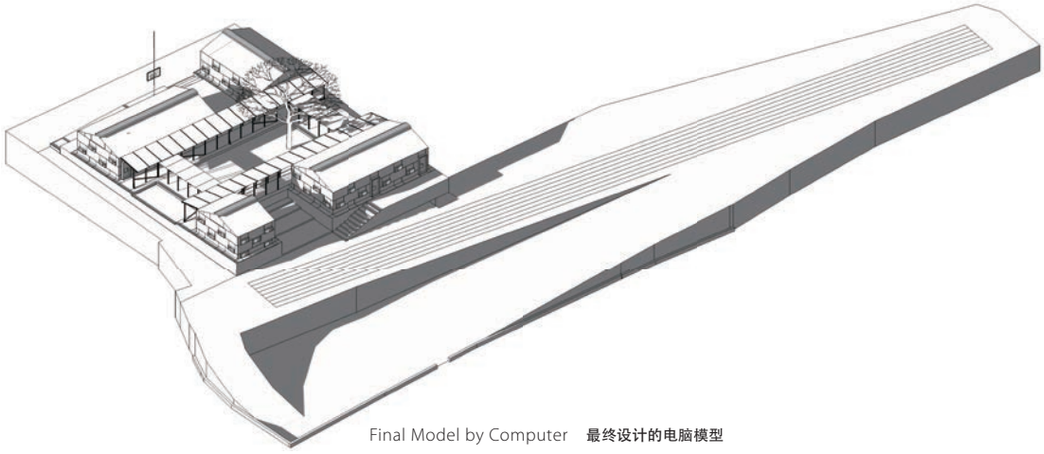
环保的理念还体现在对材料的选择上。从原校舍上拆卸下来的材料用于地面铺装、隔断墙以及热吸收构件。村民丢弃的一些石基用来布置院落。整个工程只有水泥是购买来的。废旧的砖石瓦块将地面铺装出磨石子地的效果。这不仅让当地建筑工人发挥了的技艺，而且减少了对工业建筑材料的依赖。

地上主体结构的全部部件是在深圳和成都工厂里预制完成的，所以现场装配工作显得非常简单。在香港中文大学研究员的指导下，450平方米的新芽小学校舍两周内完工了。新校舍由四个单层建筑体构成，包括围合而成的一个院落、四间标准教室、一间多功能厅、一间教师办公室、一间生态厕所。

朱竞翔教授表示：“我倾注多年心血去构思、试验这种轻型结构，并最终将其付诸实践。新芽小学的成功显示了将研究与设计实践结合的意义。研究带来新思路和新方法，而设计则将这些思路和方法应用到建筑中。研究也解决了长期以来施工速度与质量间的矛盾，将各个生产制造商的潜在能力进行整合，并为不同地区之间的联合和知识传播创造了机遇。

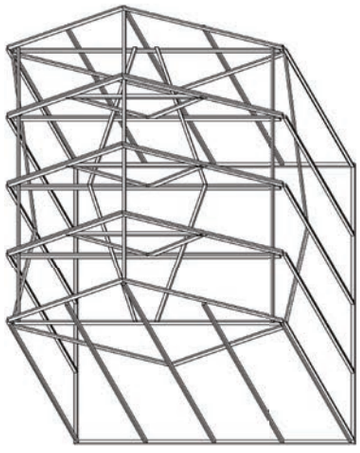
中国大陆建筑界和最大的临时住宅建筑公司都对本案表现了极大关注，不仅多次参观，而且对技术合作的可行性进行了探索。中国大陆建筑师还邀请朱竞翔教授就新芽小学的创新设计和快速施工举办讲座。施工的最后阶段，从大陆和香港招募的30名大学生志愿者与建筑师共同劳动，使学生们切身感受到创新技术，同时也具有城乡共存的象征意义。

4. Bird's-eye view
5. School context
4. 学校鸟瞰图
5. 村落肌理中的新芽小学

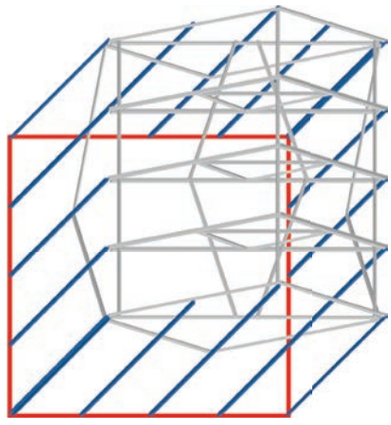


Final Model by Computer **最终设计的电脑模型**

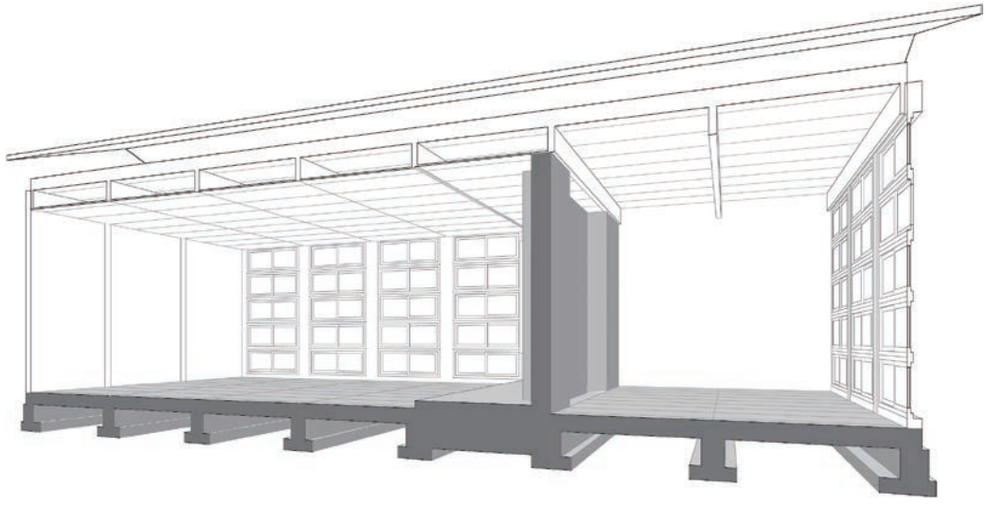
6, 7. Construction
8. Multi-function classroom
6, 7. 结构施工中
8. 多功能教室的内景



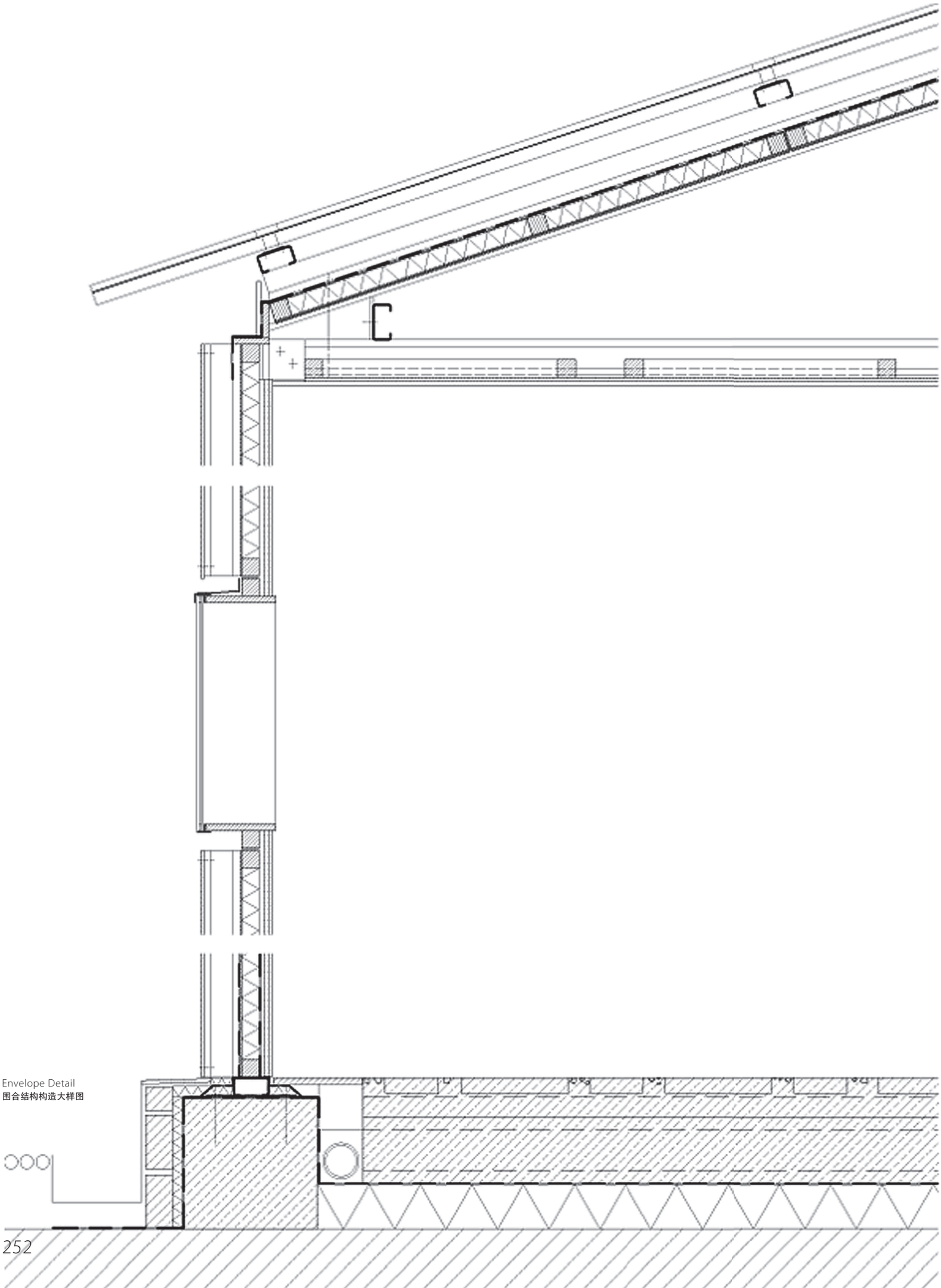
Skeleton Diagram **结构骨架图解**



Skeleton Durability Diagram **结构耐久性图解**

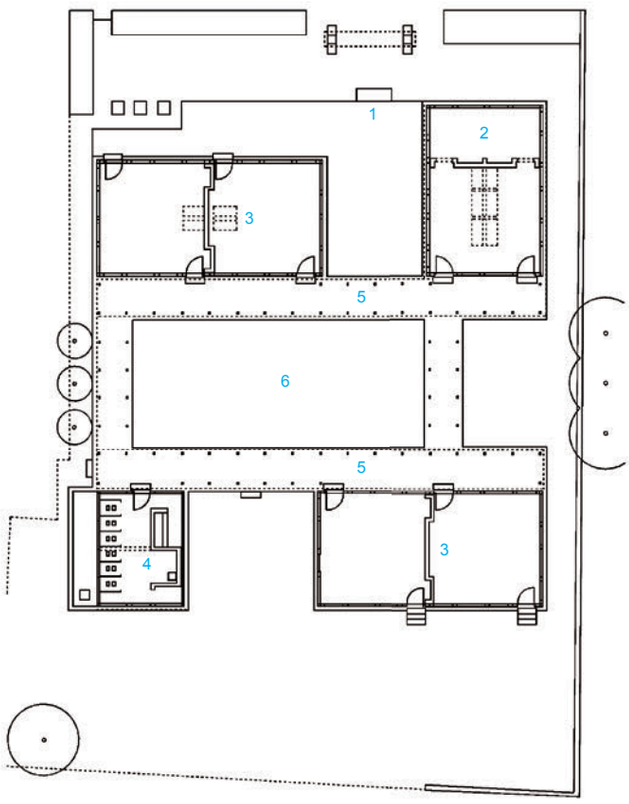


Thermal Mass for Indoor Climate Stability
利用重型材料稳定室内气候



Envelope Detail
围合结构构造大样图

9. Classrooms along river
10. Multi-function classroom at dusk
9. 临河的课室单元
10. 黄昏时候的多功能课室内部空间



Ground Floor Plan:
1. Entrance plaza
2. Multi-functional classroom
3. Classroom
4. Eco-toilet
5. Corridor
6. Courtyard

一层平面图：
1. 入口小广场
2. 多功能教室
3. 教室
4. 生态厕所
5. 走道
6. 院落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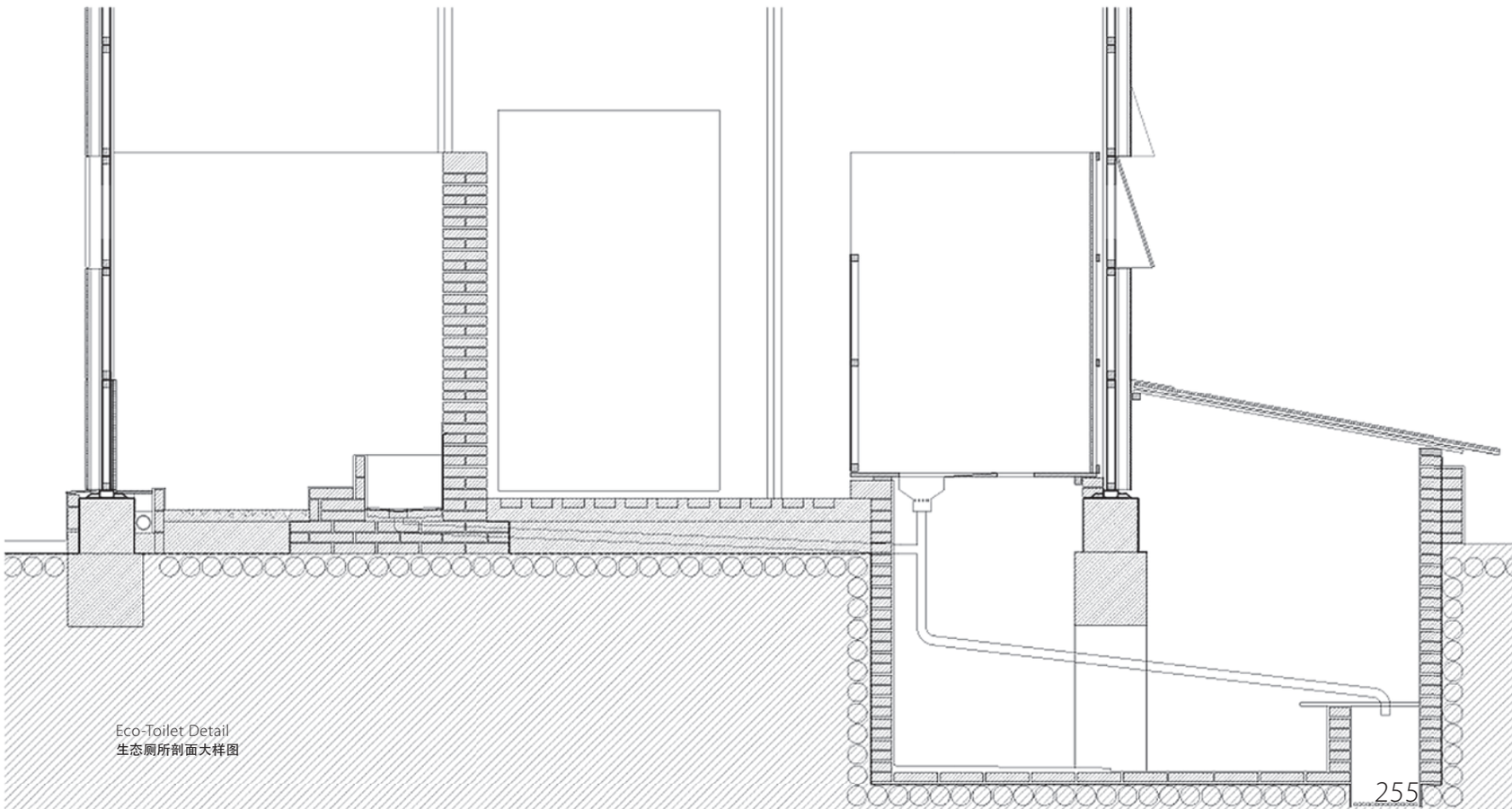
13

11. Veranda with a red roof
12. 2.4-metre-wide hallway
    as an open teaching area
13. Eco-toilet

11. 红色屋顶的走道
12. 2.4米宽的走道也可以
作为室外教学空间使用
13. 生态厕所



Eco-Toilet Detail
生态厕所剖面大样图

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