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Output 4 (Design)

XIYUAN COMPLEX

Colletti, Marjan + Cruz, Marcos (2007), Entertainment Complex, Yiheyuan Royal Summer Palace

General Description:

The Xiyuan Entertainment Complex, Beijing China is the winning proposal selected from an invited competition for a 180,000 sq m entertainment complex on a long strip of land of around 100 m x 750 m located right in front of the gates to the Yiheyuan Royal Summer Palace in the Haidian district in northwest Beijing - this being one of China's most important cultural sites.

The program is divided into two Major Entertainment Groups and eight Commercial Unit Buildings. The first major group includes eight Cinemas, a KTV, Indoor Games, and an Exhibition Area. These facilities are located on the busier east side of the site close to the Underground station and the urban thoroughfare. They are grouped together into one building complex with a major distribution area (foyer) that simultaneously connects the upper ground floor entrances, proposed road and underground station on the -6m level. The exhibition area is located strategically between the North Boulevard and the main urban thoroughfare, whereas the KTV is placed on the most visible eastern corner of the side. The cluster of three hotel units is located on the calmer west side surrounded by a wall that safeguards and protects the peacefulness of the interiors.

A 500 m long and 16 m wide road strip – the Xiyuan Avenue – through the middle of the site intersects each Unit Building, dividing it into a northern and a southern sector. The northern section is smaller and more appropriate to the pedestrian flow of tourists along the North Boulevard. The bigger southern sector contains larger inner units that relate more to the quicker pace of the high intensity car flow. From the Xiyuan Avenue, the grouping of all units into Unit Buildings enhances the intervention's urban character, in particular through the variety of façades and in-between open spaces. From the south and north Boulevards, on the other hand, the gaps between buildings interweave gradually the landscape with the proposed built form, minimising the impact in such delicate site. The sequence of these autonomously standing volumes organises the underneath common car park and also the use of the upper roof areas. These interstices are designed to be circulation spaces that enable direct ventilation and insulation for the majority of units. It also allowed for a separate management of units, as well as a possible phasing during the construction time.

All individual units inside the Unit Buildings are divided into duplex typologies with direct car access on the front façade (either from the South thoroughfare or the Xiyuan Avenue). In many cases there is also a pedestrian access provided on the floor underneath or above the duplex unit (either from the North Boulevard or the ground floor path along the Xiyuan Avenue, called Xiyuan Promenade). Internal Circulation Nodes within the duplex units integrate staircases, escalators, toilets and/or small office spaces in an in-between mezzanine floor. Crossing staircases of two neighbouring units allow for a visual interchange between users of different units.

There are three types of proposed plazas in the Xiyuan Entertainment Complex: two Sunken Plazas in the car park – The West Sunken Plaza and the East Sunken Plaza – a larger plaza on the -6m level – the Xiyuan Piazza – and several courtyards in the ground floor level of each building – the Upper Courtyards.

Research Questions:

(1) How can innovative CAD/CAM design and manufacturing techniques be used to generate a new contemporary architectural identity in China?

Periods of American, Russian, and nowadays multinational influences have created crucial episodes in China's architectural history, unfortunately based on mimicry and imitation of elements or aesthetics of great Chinese architecture. Similarly, but from the opposite end, after a period of straightforward copying of Western trends, followed by partial rejections, China's incorporation of global economic and cultural phenomena is irreversible, but should be now transcended. Regardless of nationality or provenience, the Orientation of architects world-wide towards the East should be understood as a sign of hope for architecture today and the future. If used appropriately, new available and affordable technologies can place at the architect's disposal new ways of expressing contemporariness and identity (of both the designer and the client).

Aims/Objectives:

The project provides new design solutions in terms of:

(1) Technology (CAD/CAM applied to structure and skin).

Architecture in China today has to encompass experimental technologies in order to become innovative. Because formal and technological know-how can be adopted rapidly and simultaneously in every part of the world, the proposal aims at global sophistication within a local context. The proposed architecture attends to the historical development of China's socio-cultural space, and focuses on the employment of groundbreaking technology that could combine high-tech manufacturing processes (China's growing industrial know-how) and low-tech assemblage (China's available labour). A thoroughly contemporary and advanced structural and material building solution is envisioned that incorporates Chinese sensibility into a technological state-of-the-arts computerised design and construction process.

(2) Typology (giving full attention to social and aesthetic concepts grounded in significant Chinese architecture).

As much as observing the past, the design concentrates on a meticulous integration of the project on such a vulnerable site, as well as interpreting the contemporary Chinese society - especially in terms of new habits and particular manners in which private and public spaces are appropriated. A sequence of distinctive interpenetrating roof structures, along with a series of courtyards—designed as protected yet public spaces—extend the tremendously rich lineage of notable Chinese historical buildings, whilst translating such concepts through the requirements and intentions of a contemporary commercial intervention. Main interpreted aspects of traditional Chinese architecture include the employment of specific buildings for particular functions (hotels and KTV), the implementation of a unit system similar to that of a traditional low-rise Chinese city (retail/entertainment units), the use of courtyards that would be accessed by a series of corridors (building interstices), and the intention of blending buildings with the natural surroundings (green belt and accessible roofs from the south side).

(3) Architectural language (tradition and innovation).

The project endeavours to dispose of a long-standing dual thinking in which terms such as 'essence and form', 'traditional and modern', or 'East and West' are reducing the conceptual framework of architectural discussion and production. Other traditional aspects the Xiyuan project has includes are a degree of transparency and sense of ambiguity between inside and outside spaces (as in the proposed Xiyuan Avenue), and the treatment of flat surfaces in a technological manner (CAD/CAM stone roof, metal and wooden screens), exploring abstraction and ornamental patterns on their overall appearance.

Context:

The project's proximity to a world heritage site and its consequent height restrictions to 3.3 m triggered an inherently contextual and low-density proposal, as opposed to the pervasive western-style impositions of high-density commercial infrastructures.

The roof is designed as the most prominent part of the intervention, suggesting the encountering of tradition and modern design. Due to the limit of the building's height, the roof is understood as the 'fifth' façade of the building. The rippling of the water surface on the Kunming Lake, and the curvature of the Royal Palace's roofs inspires the concept. Imagine letting a drop to be fallen at every important point of the site, creating a sequence of ripples that intertwine with each other. The big ones symbolise the more important parts of the building, such as the main entrances, whereas the smaller ones represent secondary areas. The volumetric appearance of the complex thus resembles that of a village.

Research Methods:

The research involved four major stages to develop drawings, diagrams, hand-made and CAD/CAM models:

(1) The 'Big Roof' phenomenon: readdressing the traditional upturned tiled roof. Initially, the competition brief demanded to cover the whole building with a series of traditional Chinese upturned tiled roofs that would give this intervention a conspicuous Chinese face. Here, the 'Big Roof' was a mask, a powerful symbol that would link a modern programme to the historical past of the Summer Palace. In the words of Liang Sicheng the architecture would be 'wearing a Western suit and a Chinese skullcap'. This 'adaptive approach' of a Western-style building hidden behind a Chinese-style roof was reminiscent of a long-lasting debate, in which a conceptual binary distinction between the notion of essence, body, foundation, content or structure (ti), as opposed to form, application, use and function (yong) had largely troubled Chinese architectural history.

(2) From mono-programmatic to multi-programmatic: the redefinition of the pre-established programme.

Due to uncertainties regarding the financial viability of such programme—so common in contemporary China—the project went through considerable design changes. From an open and very permeable multi-purpose intervention with retail areas, conference facilities and public entertainment in the first stage, the project transfigured in the second stage into a mono-programmatic, large-scale shopping mall. In the later stages it turned

back into a multi-programmatic entertainment complex with hotels, shop and entertainment units, KTV and cinemas, exhibition/culture facilities. Although the idea of a highly marketed intervention under the brand name of a Western architect, characterised by the fake image of a 'Big Roof', was abolished, the roof controversy remained. Yet it was turned into a large accessible green area allowing a variety of recreational and sports facilities, which afterwards turned into a large stone surface.

(3) Subtle contextualisation: the careful analysis of buildings masses, circulation flows and green areas.

In the third stage the analysis of the immediate environment revealed localised rhythms of massing, distinct primary circulation flows, numerous secondary itineraries and clear orientational landmarks. In the broadest sense, the location of the Royal Palace and its resultant tourist pedestrian traffic allows to draw a street (Xiyuan Avenue) through the site. In order to achieve the percentage of green area required by the Beijing Municipality (30% of ground floor area), all buildings and roads are grouped into a dense cluster of buildings in the middle of the site, creating a green belt all around it. This longitudinal urban park integrates external parking, pavements, recreation spots and several water pools. It allows a close contact between tourists that walk along the Boulevard and the facing building façades and brings natural light and ventilation to the dining rooms and reception of each hotel in the –6 m level.

(4) Technological and cultural synthesis: the application of CAD/CAM technologies to primary steel structure, stone cladding and wood detailing.

Three particular design and manufacturing technologies could be adopted: CAD/CAM milling technologies of different stones (perhaps traditional Jinshansi, shanshi, black qinshi, and Nudoushi sandstone) are proposed for the vast roof surfaces and façades. As demonstrated in the recent achievements on Antoni Gaudi's Sagrada Familia in Barcelona, such CAD/CAM technology would provide an adequate and economic solution for similar design preoccupations. The result would resemble the sensibility of jade and red lacquer carvings, and of the marvellous marble carved stone in the Forbidden City. In fact, due to the proximity to such an important heritage site, the roof landscape of the proposed buildings (constructed in different phases) is considered a vast, contemplative, stone carpet that introduces the Summer Palace.

CAD/CAM laser, plasma, water-jet or oxy cutting techniques could be used for the manufacturing of the main steel structure and some façades screens, as well as internal secondary structures and division walls. Because these technologies are long established in the shipbuilding industry and strongly expanding, such strategy would allow a precise and uncomplicated manufacturing of the structural skeleton of the buildings. On a smaller scale, the timber construction technique of the NURBSTERs is proposed, whereby notched laser cut elements can be assembled without the need of nails or screws—similar to Chinese traditional timber temple structures.

CAD/CAM Rapid Prototyping techniques would enable the manufacturing of specific pieces, as well as the production of precise scaled models. Thanks to the advancement of 3D engineering and hi-tech computerised design and manufacturing process, expensive skilled labour during assemblage would be less required.

Dissemination:

The project has been exhibited in numerous places. These exhibitions include: marcosandmarjan solo exhibitions Interfaces/Intrafaces at the Institute for Cultural Policy Hamburg and Architekturpavilion TU Braunschweig Germany (2005); Feng Chia University Taichung Taiwan (2005); 237th Royal Academy General Summer Exhibition London (2005); Metaflux in São Paulo Brazil, Lisbon and Aveiro Portugal (2005); Venice Biennale Italy (2004).

Authored articles include:

- Colletti, Marjan; and Cruz, Marcos. 'Orient-ations. On the example of the Xiyuan Entertainment Complex', *Dialogue: Cross-cultural Exchanges in Architecture, A+T Architecture + Time*. Shanghai: Tongji University Press, September 2006, pp. 48-53.
- Colletti, Marjan; and Cruz, Marcos. 'Xiyuan Entertainment Complex', *Complessità e Sostenibilità. Il Territorio e l'Architettura* #1, March/April 2007, Milan: Gangemi Editore, pp. 7-8.
- Colletti, Marjan. 'East of Yiheyuan', *East of Eros Architecture Annual 2005*. London: Royal College of Art, 2005, pp. 82-3.
- Colletti, Marjan; and Cruz, Marcos. 'marcosandmarjan', *Demonstrating Digital Architecture, 5th FEIDAD Far Eastern International Digital Architectural Design Award*. Basel/Boston/Berlin: Birkhäuser, 2005, pp. 100-6.
- Colletti, Marjan; and Cruz, Marcos. *marcosandmarjan: Interfaces/Intrafaces*. Vienna/New York: Springer, 2005, pp. 108-19.

The project has also featured in several other publications including:

- 'Xiyuan', *Complessità e Sostenibilità. Il Territorio e l'Architettura* #1, Milan: Gangemi Editore, pp. 7-8
- Vaz Milheiro, Ana. 'Portugal 2000-2005 um guia temporário'. In *2G Dossier 05. Portugal 2000-2005 25 edificios do século XXI* (Spain), 2005, p. 9.
- Young, Eleanor. 'Cook's new receipt' in *RIBA Journal*, June 2005, p. 10.
- Menezes, João Paulo. 'Um arquitecto português com obra em Pequim'. In *Ponto Final* #817 (Macau), June 2005, pp. 10-11.
- Gadanho, Pedro; and Pereira, Luis (eds.). *Metaflux. Catalogue of the Portuguese Official Representation at the 9th Architecture Biennial Venice*. Lisbon: Civilização Editora and Instituto das Artes, 2004, pp. 123-31, 211-12.
- Arnaboldi, Mario Antonio. 'Agora / Dream and Vision – marcosandmarjan', *L'ARCA* #206 (Italy), September 2005, pp. 46-55.
- Baptista, Ana. 'Projectar em Pequim', *Construir* (Portugal), 22 October 2004, p. 27.

The Xiyuan entertainment complex was also featured during the broadcasting of Unit 20 work by CCTV-China at the Bartlett School of Architecture, UCL (27 May 2005).

Esteem Indicators:

This project was the winning entry of a major invited international competition (2004).

Since then, the project has been presented in numerous lectures and seminars globally by Marjan Colletti and Marcos Cruz.



Image 1: Final phase of project inserted into urban fabric in front of Yiheyuan Royal Summer Palace, Xiyuan (2004)

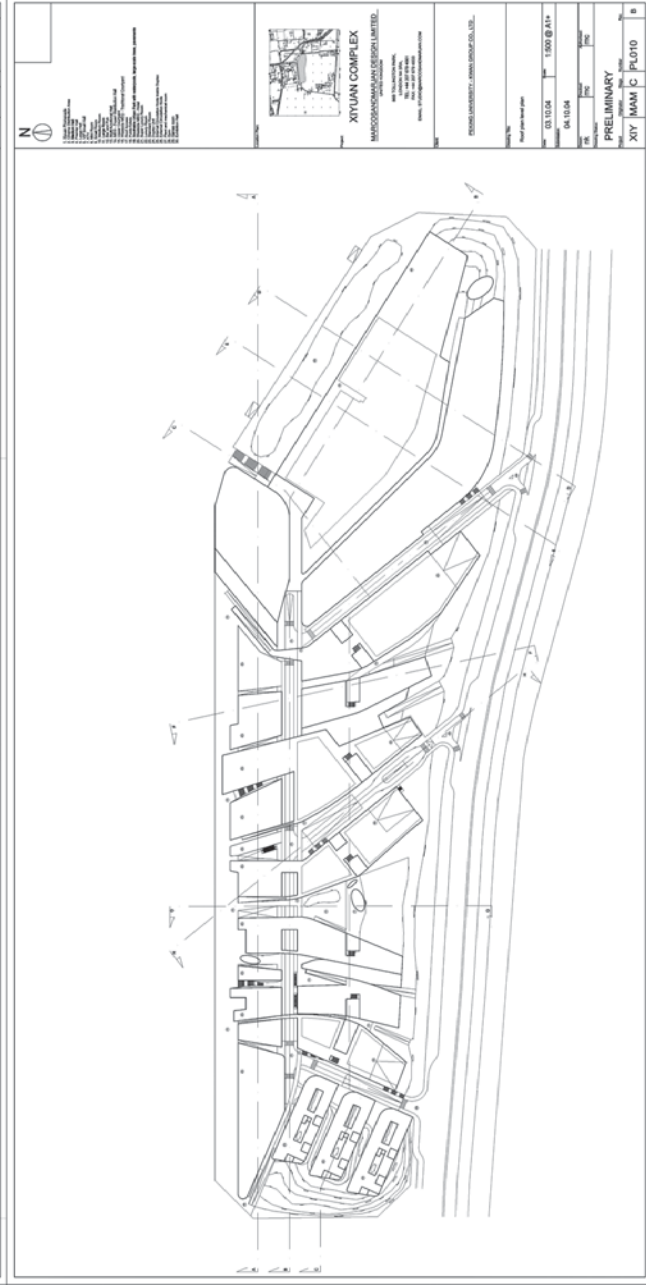


Image 2: Final phase - plans of roof and ground floor, giving arrangement of the various buildings and the internal subdivision of units

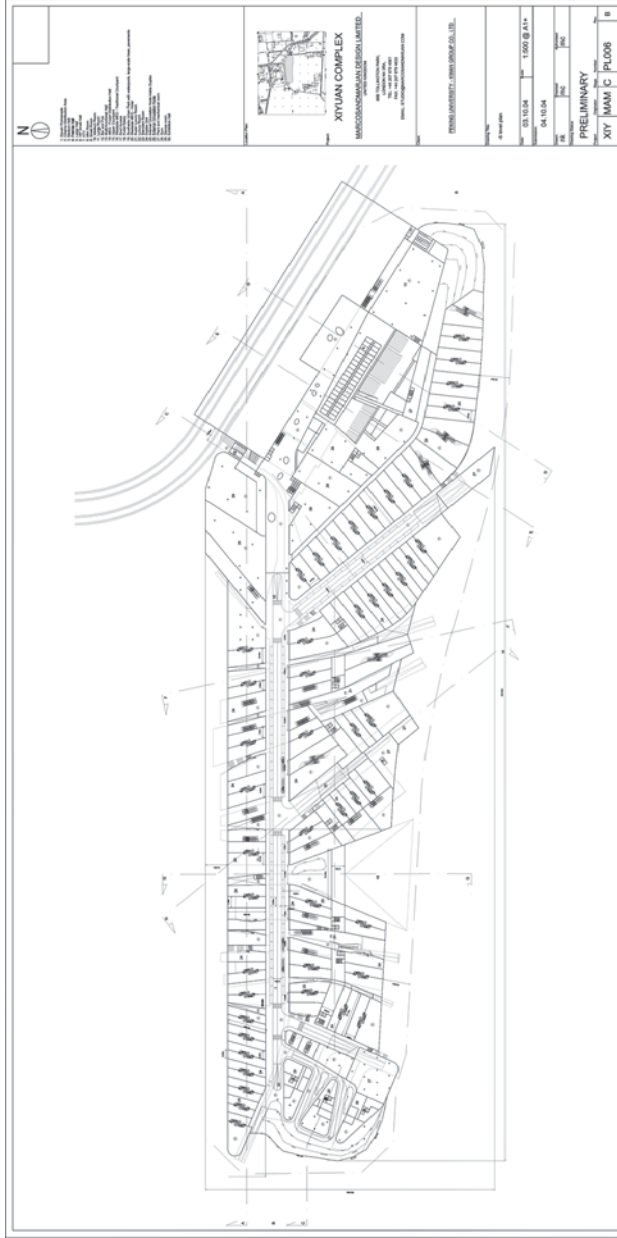


Image 3: Final phase, plans of basement levels showing Xiyuan Avenue and the underground car park

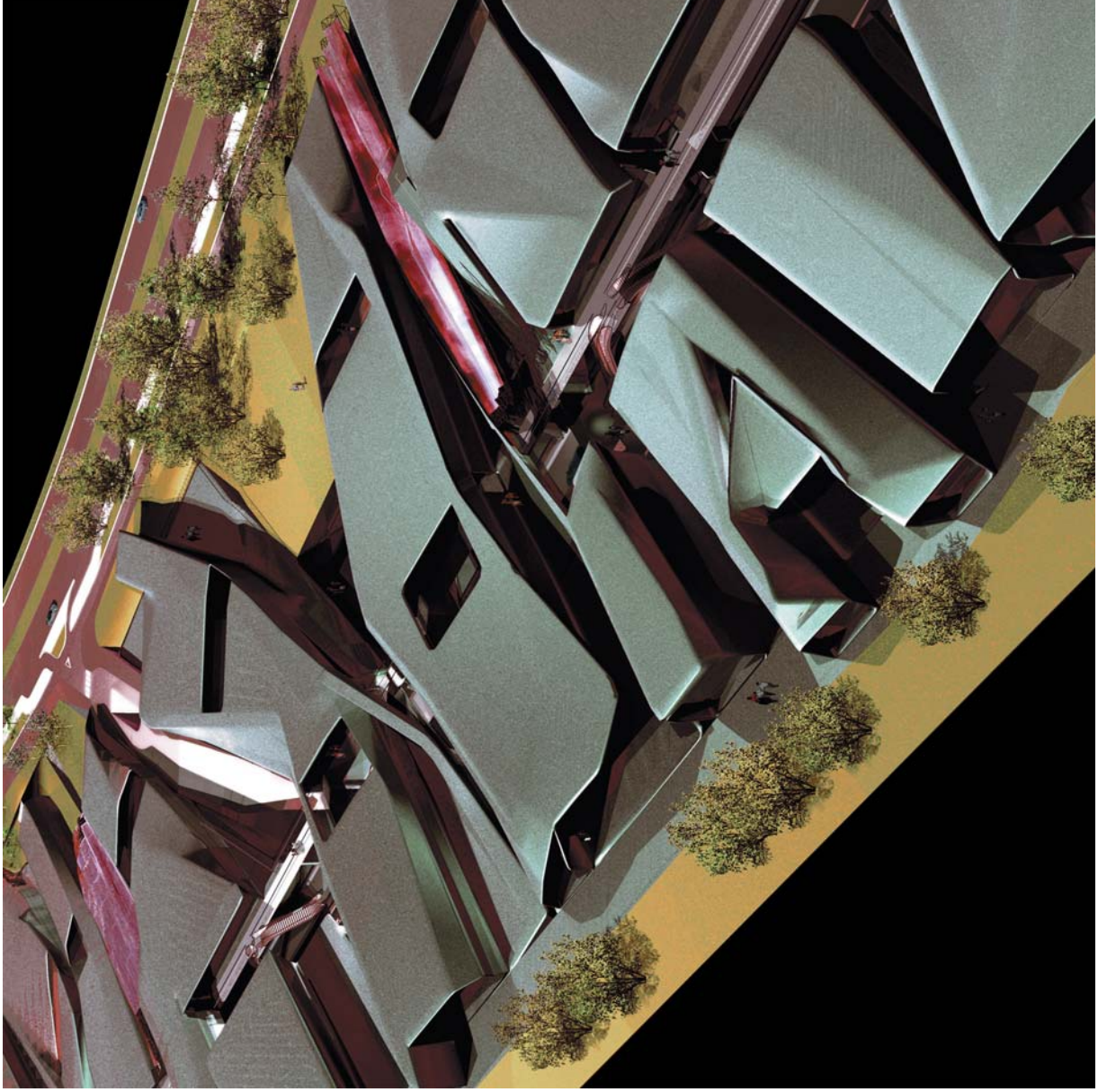
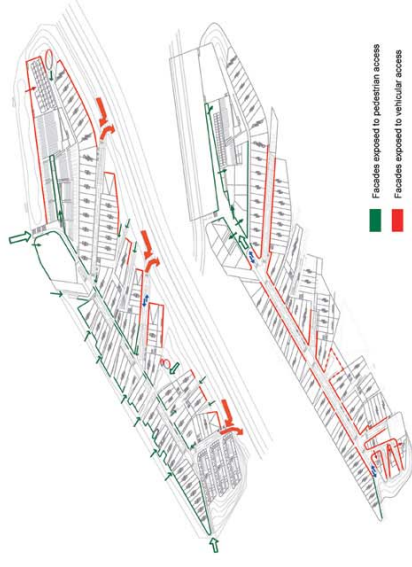
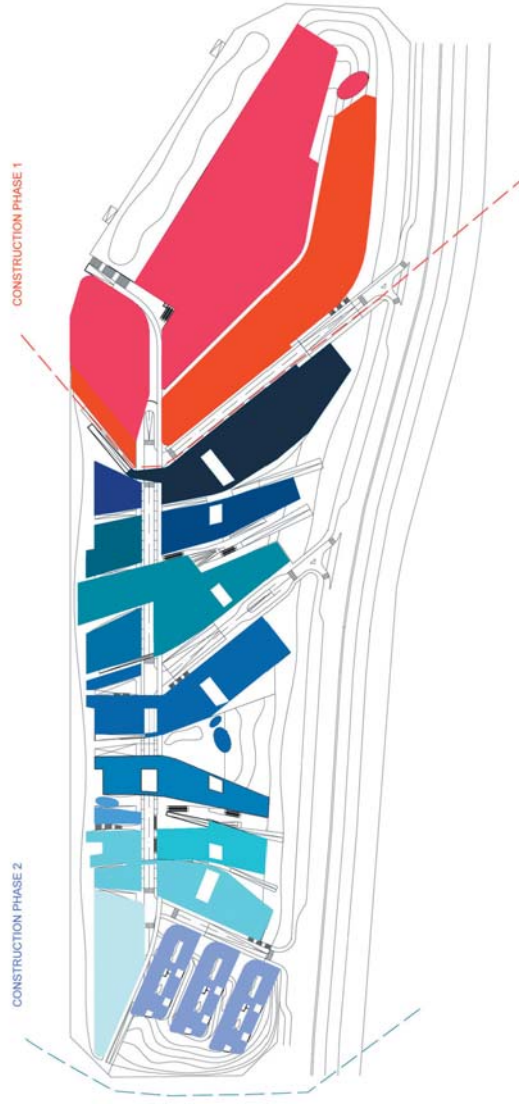


Image 4: Final phase, general view

Image 5: Final phase, diagram of different building phases



Facades exposed to pedestrian access
 Facades exposed to vehicular access



Diagram-01
 游客交通流线
 TOURIST ROUTE



Diagram-02
 城市道路交通流线
 CITY ROADS ROUTE

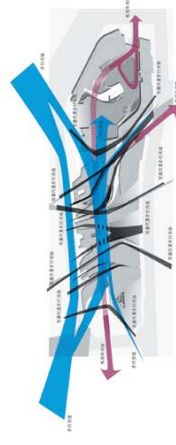


Diagram-03
 城市道路交通流线
 CITY ROADS ROUTE

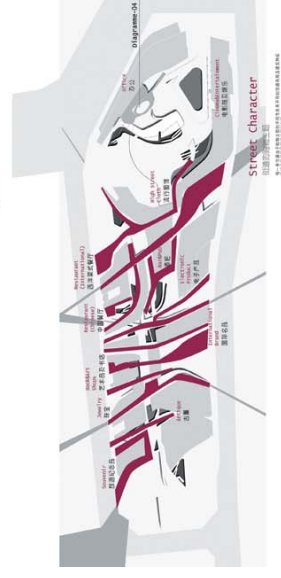


Image 6: Various phases, diagrams showing pedestrian and vehicular access to the duplex units and the convoluted circulation from north to south, east to west, and across all levels



Image 7: Final phase, horizontal sections and digital models of the building's skin

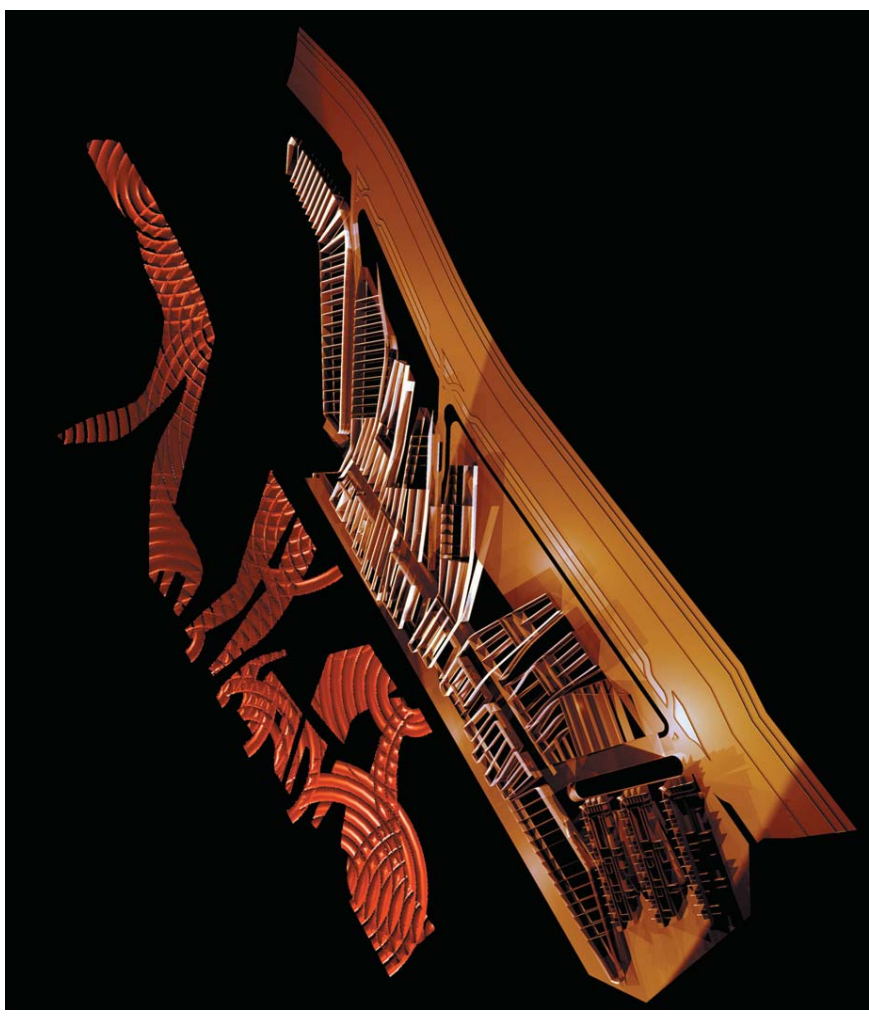


Image 8: Final phase, rendering showing reinterpreted traditional internal units and carved stone roof

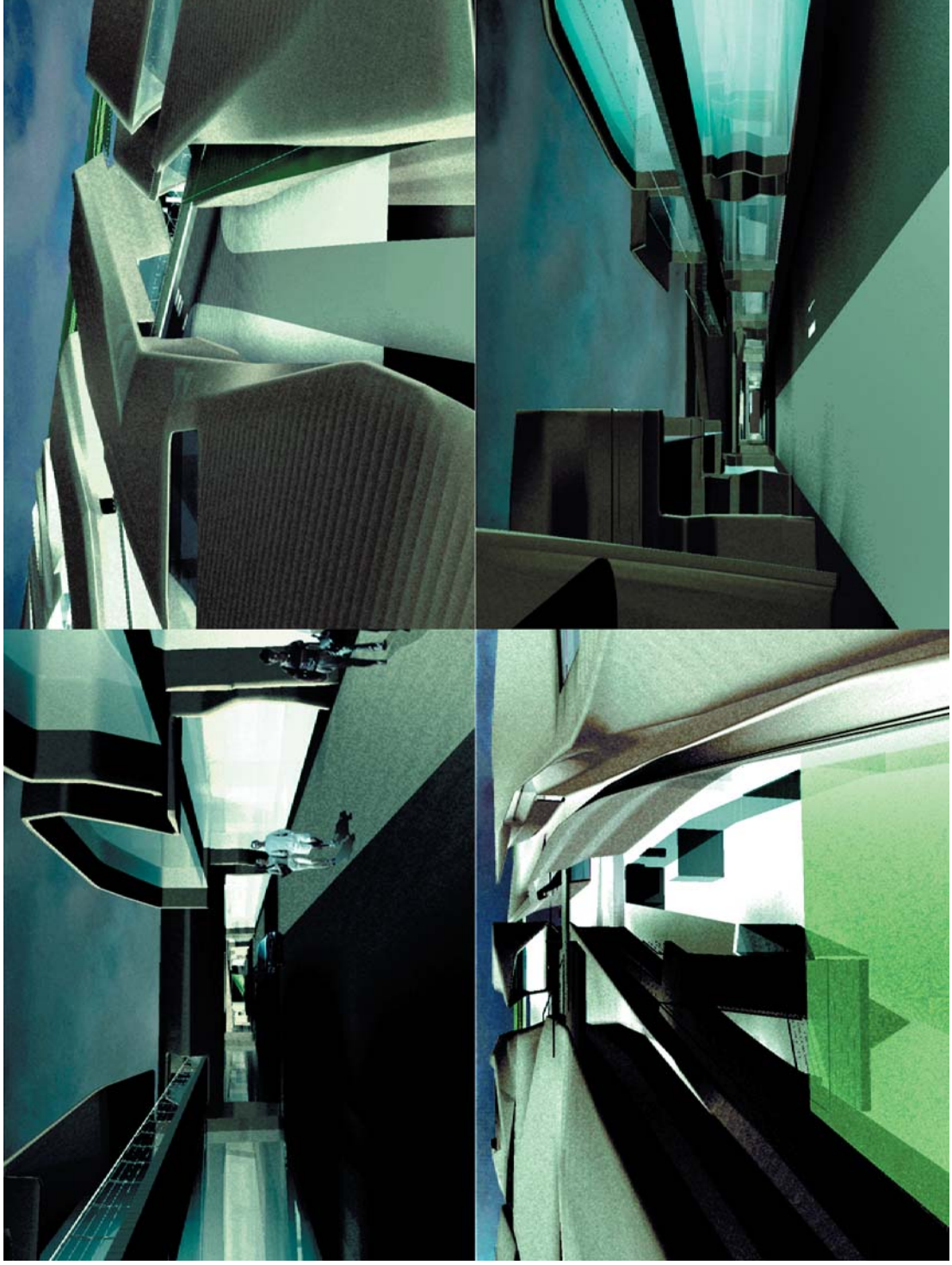


Image 9: Final phase, renderings of the intersecting roofs and interstitial spaces

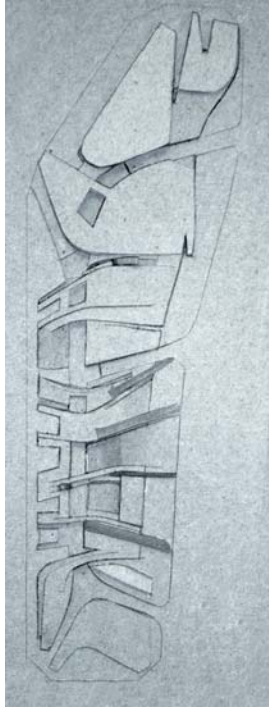
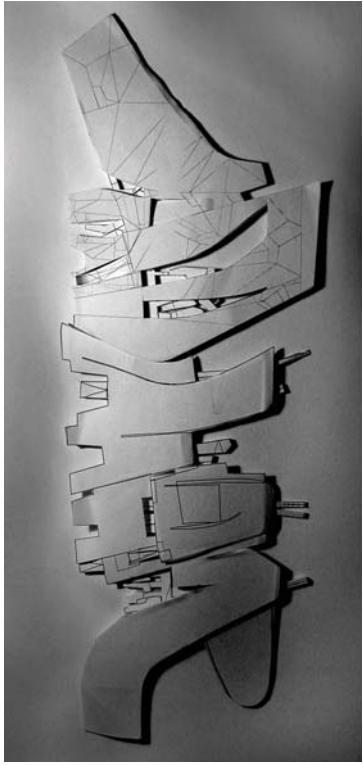
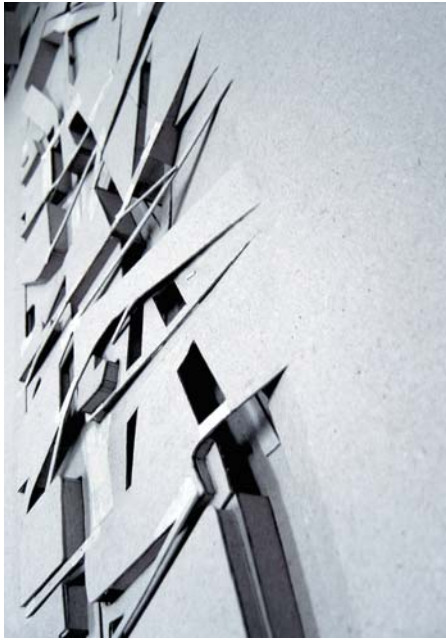


Image 10-14: Various phases, cardboard models showing arrangement of units and courtyards

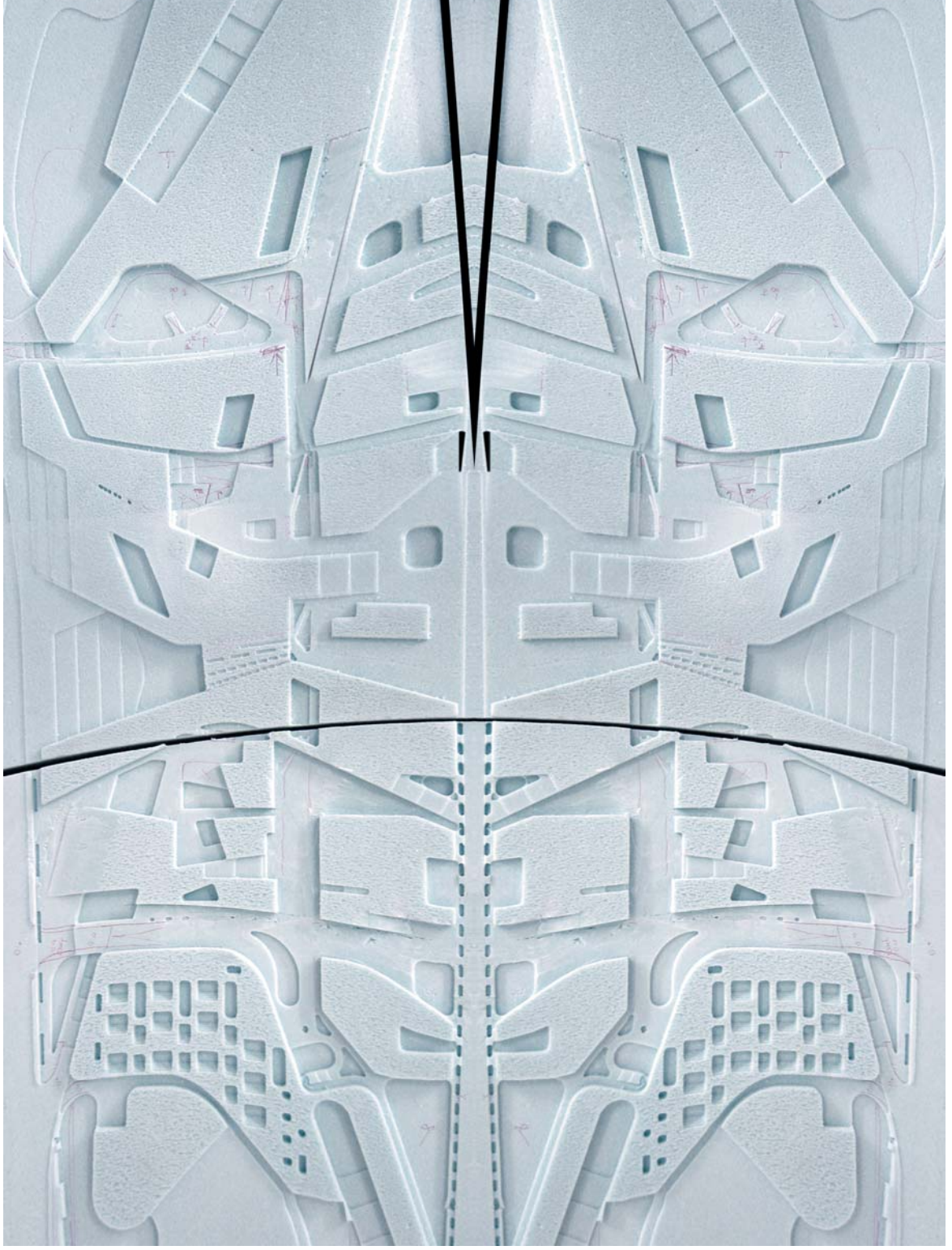


Image 15: Milled CAD/CAM foam model showing ornamental patterns based on the general layout

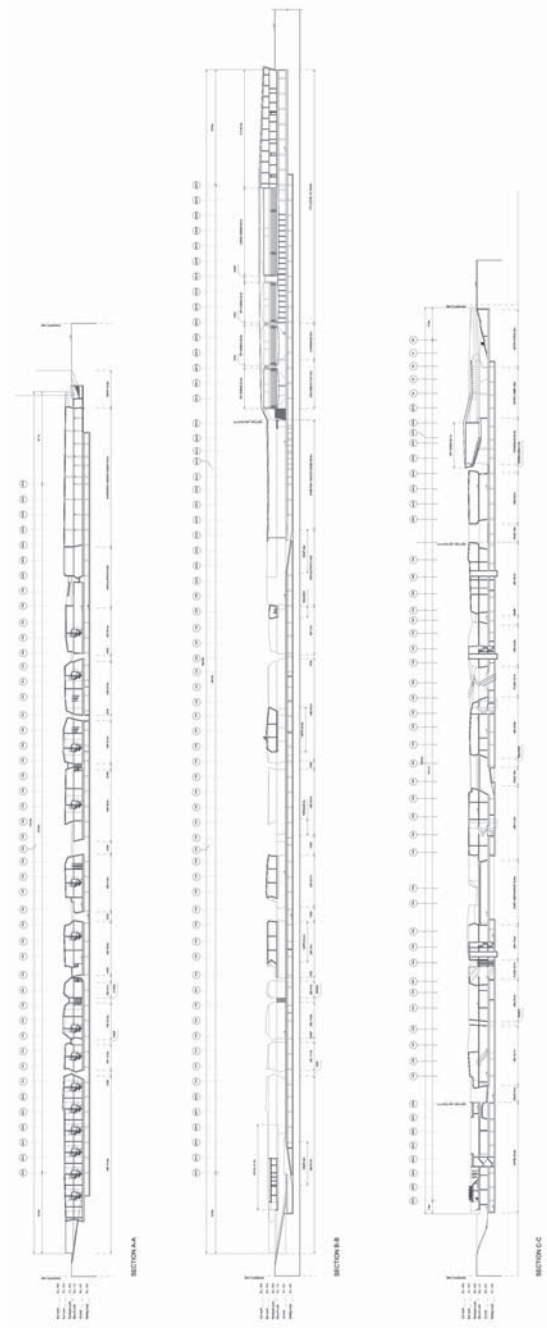
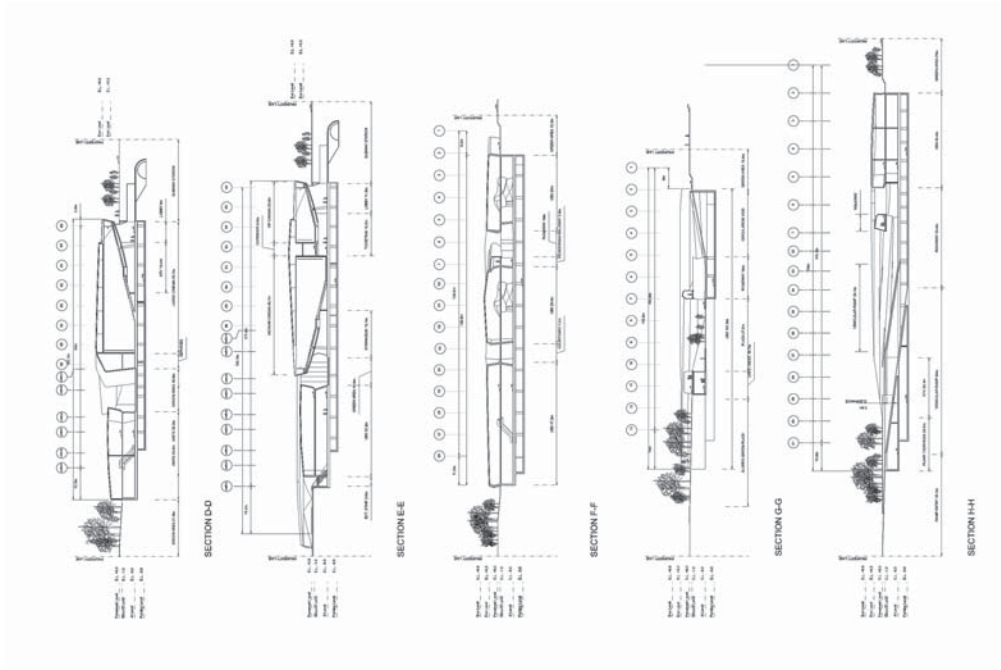
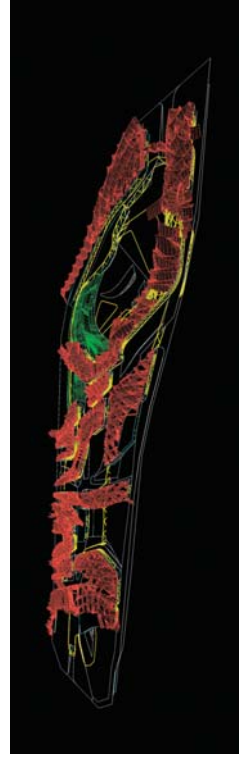
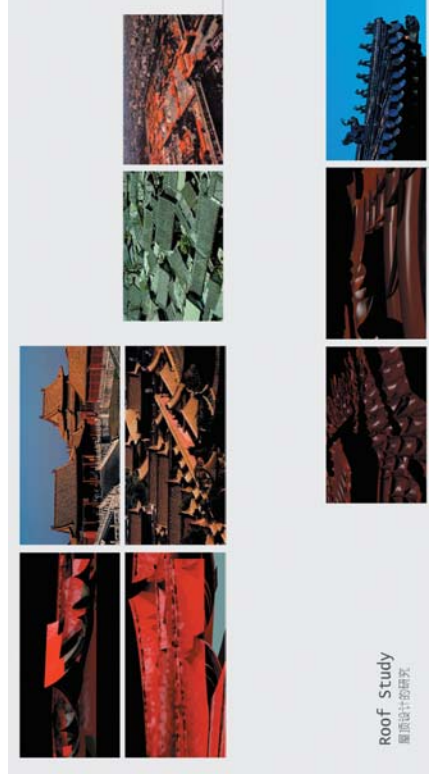
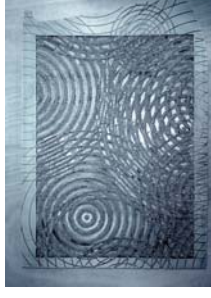


Image 16-17: Cross and long sections showing the extreme flatness of the intervention



Images 18-22: Competition phase, drawings and CAD/CAM models to study the convolution of the site to create reinterpreted Chinese roofscape

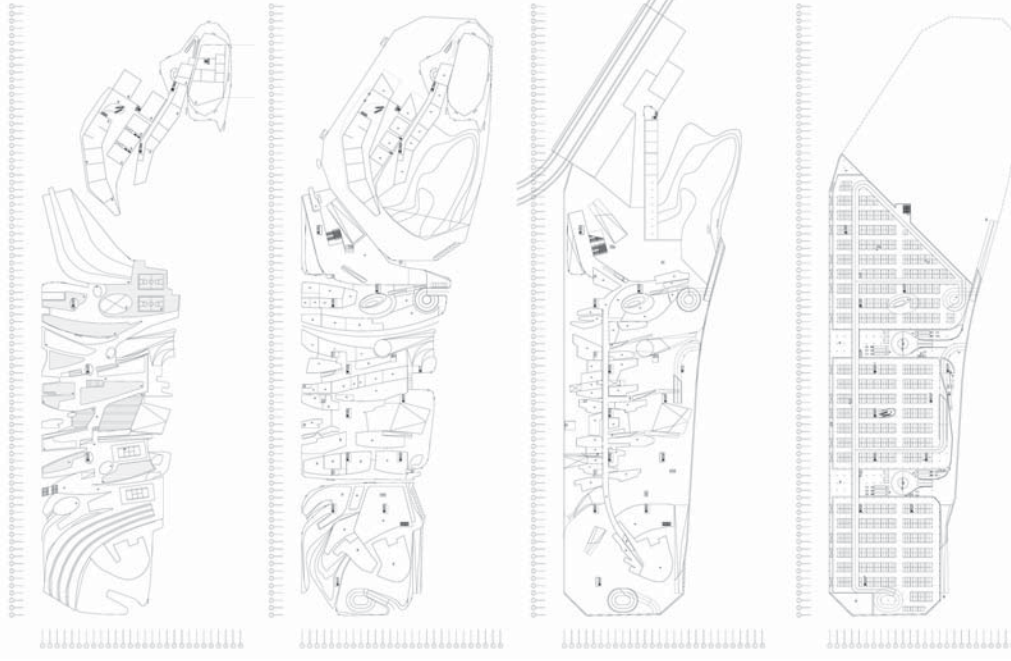


Image 23: Second phase, plans of roof, ground floor, first and second basement level and car park

Image 24: Final phase, diagram of green areas





Image 25: Carved stone of the TaiHe Temple in the Forbidden City, Beijing



Image 26: Bird's eye view rendering showing the flat, carpet-like stone roofscape

Images 27-32: Various exhibitions of the Yiheyuan scheme models around the world, plus an interview by CCTV China

