

Chengdu Museum, China

DESIGN RESEARCH

10.10.2012

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Sutherland Hussey Architects

INTRODUCTION

The focus of all the work of our practice is concerned with 'context' and the genius loci of place. Our work builds upon our experiences as design assistants within the office of James Stirling back in the late 1980s and early 1990s, at a time when his own work had shifted from the technically inventive (eg the Cambridge Library, the Florey building in Oxford and the Leceister Engineering) to an interest in contextualism (such as the StaatsGalerie in Stuttgart and the Tate in London).

Since setting up our own practice in 1996 we have been fascinated with the idea that every place has its own unique qualities, both in terms of its physical qualities and its cultural , political, economic and social characteristics, and that logically the responsibility of the architect is to be sensitive to those unique qualities, to enhance them rather than to destroy them.

As a practice we have been influenced by the ideas first expounded by Ken Frampton in his book *'Towards a Critical Regionalism: Six points for an architecture of resistance'* where he recalls Paul Ricoeur's "how to become modern and to return to sources; how to revive an old, dormant civilization and take part in universal civilization". According to Frampton's proposal, critical regionalism should adopt modern architecture, critically, for its universal progressive qualities but at the same time value should be placed on the geographical context of the building. Emphasis, Frampton says, should be on topography, climate, light; on tectonic form rather than on scenography.

Our Project for the new City Museum in Chengdu presented us with all these challenges and issues in an unfamiliar context and culture touching on another aspect of our work as an extention of our experience within Stirlings office.

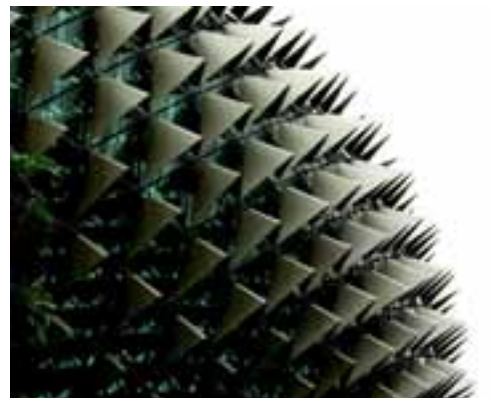
We had both been involved in a number of high profile International projects overseas, these included the Temasek Polytechnic Singapore, the Singapore National Arts centre, The New Brittish Embassy Berlin and The State Music School Stuurgart anong others, These were all projects which were concieved designed and contriolled from Stirling's London office in Fitzroy Square , and despite the scale complexity and significance of these projects, the of-
fice of less than 20 Architects would maintain total control, Artistic and Architectural integrity throughout.

The working methods uniquely established by Stirling in his office were ideally suited to delivering International projects of this scale and arguably these methods evolved as a direct result of such projects.

The tightly controlled design nucleus in London would have a delivery partner on the ground in the overseas region, Our experience of this working method and strategic design approach were both critical and influenced greatly the way we approach our work in China

The Chengdu Museum project is an explicit example of these issues in which we are both evolving an architecture within a remote cultural context and how we translate and deliver this successfully. on the other side of the globe.

CHENGDU MUSEUM, SICHUAN PROVINCE, CHINA



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NARRATIVE

The issues surrounding of this project multiple and complex and relate both to the extraordinary economic growth of China and its own development and rediscovery of its cultural past and how we can help contribute to thiiier cultural future,

It is also how we as invited experts engage, interpret and respond to these highly complex political social and historical contexts. We are not simply working with the physical context of site and place We are activley enfaged with the process by which China delivers its cultural policy and locally how this tranlates linto a building with regional cultural and cotextual meaning and relevamnce. Our international collaboration is one significant aspect of this process of finding a balance to these sometimes conflicting agendas.

The other major issue which is raised in this project is the National policy directive that Western Architects must be part of the conceptual design all Natioanally significant buildings. This has had the cosequence that design and contruction of projects in China have been entirley separated and consequently the resolutioun of bulidings are very poor interpretations of the original design intent

In this project we are activley demonstrating a way of collaboraing which could be a template for a new model for International collaboration in China.

We have been engaged with our partners for final delivery of the key aspects of the design through to completion with particular responsibilty for the external skin.



View from Tianfu Square

CONTEXT

China's rise as a new global economic power has meant that it has become a frontier land for all those related to the Construction Industry. The Incredible rate of economic growth has been fuelled by the massive urbanization programme which has necessarily required China to look outside for expertise and skills

In 2007 it was reported that China would build 5000 museums in the following five years as part of a national programme to rediscover their heritage and to promote international tourism

The previous and extant generations of Building professionals were all schooled in the science of building with an emphasis on engineering and planning. The culture of Architecture and design was limited, and the delivery of design was entirely state controlled through the huge design Institutes, the only licenced Architectural practices with authority to practice in China

The skills transfer required to deliver these national policies needed to be rapid and immediate and many collaborations and partnerships were established in the early 21st century between Western practices and Chinese design Institutes to facilitate this need

The method by which all public contracts are awarded in China is through the competition process, normally Internationally Invited participants. The process is very heavily driven by careerist politicians who use development and Architecture as evidence of their individual achievements in office.

An existing proposal for the New Chengdu Museum by American Chinese Architect IM Pei was rejected by the city and a competition for the was started in 2007, We were invited to be on the shortlist as a result of government work we were already carrying out in the region

The competition was largely focussed on identifying a formal Architectural response and to understand one's attitude to the site in terms of scale and massing, and one's contextual and cultural response to the city. Very little information was given in terms of a programme or detailed briefing. In contrast to the way that competitions are carried out in Europe the

major urban scale issues would be addressed before detailed designs were developed. This was a complete departure from our normal method of working and was a curiously liberating approach to design.

Having identified our design through competition, a further process of seeking endorsement from the Party and thereby securing the funding was necessary. This again a highly political and dangerous stage, when many designs are entirely redesigned at the whim of the governor or mayor or worse still disasterously altered.

This process of procuring public buildings in China is generally designed to ensure that the realisation phase is carried out by only the State run and licenced design Institutes and that the design Architects, not being licenced to practice in China beyond Conceptual stage planning, have no further involvement or responsibility.

In order to secure the realisation stage, we entered a joint venture agreement with Pansoulution International to secure the right to carry out the realisation stage in a second stage tender in 2010. By securing with our partners the critical design realisation packages we secured a significant role through to the completion of the project.

METHODOLOGY

Methodology

The design process involved a number of tools and procedures and is separated into two stages, the competition, and post competition as they employ markedly different methods

THE COMPETITION

1. The initial design process was a rapid and exploratory series of small scale urban models testing the programme on the site and formal arrangements to provoke discussion with the Director of the museum in a series of briefing discussions prior to the competition submission
2. A rapid series of research site visits which explored the cultural and historical context of Chengdu through a series of meetings with several mayors/poets/artists from the city to discuss the wider cultural influences from understanding the Geology and the geography of the city which defined the city as a haven for artists, to its historical status as the melting pot of the tribes, and the significance of shadow play theatre.
3. The final design stage for the competition submission was focussed on synthesising the raw research material we had gathered along with what we had learned through testing studies into a culturally loaded if not overloaded artefact
4. The representation of the design was a coalescence of an interchange of ideas metaphors and images between Edinburgh and Beijing which reiterated and focussed the design representation to reinforce the core ideas which underpinned the design a highly visual presentation which could express the ideas without words.

The process which we had to develop for this project was largely down to the logistical challenges of communication representation and the cultural context.

We drew upon our previous experiences of working with partners abroad within Sir James Stirling's office and along with rapid methods of digital modelling which could explain ideas very quickly to China

The final iteration of the model was developed within two to three days of intensive modelling in Edinburgh which formed the basis for a team of Beijing animators and renderers to produce films and stills for the final presentation and to produce a 1:200 physical model

POST COMPETITION

1. Physical and digital models exploring the spatial and programmatic needs of the museum and to help the museum director and the team understand the complex spatial geometries and to test and explore the building and its integration with structure and services
2. Parametric modeling methods employed from an early stage to develop quick methods of adjusting complex interrelated geometries of the skin and scripting developed to generate the folded subdivision automatically and for all production information of the developed skin drawings to be generated from the model
3. Extensive modelling in Microstation GC and Rhino to develop the skin geometry and the topological issues of establishing parallel structural planes
4. Research into the copper alloy material from sourcing the supplier to the manufacture and installation and fabrication including an extensive research visit to Europe to understand the fabrication limitations and possibilities at the factory and to research the application of the material in several significant projects in Germany Finland and UK to understand the effects of oxidation maintenance and different methods of installation
5. Full size testing of copper alloy mesh and cable fascade assemblies to research visual appearance and detail assembly issues
6. On going full size mock ups and assemblies to test combinations of panels mesh and glazing

The Post competition methodology was essentially to enable design development and delivery. The normal course of events would have ensured that the design would have passed to the Design Institute without any reference to us but Our method of developing the design involved a constant iteration of digital models in Microstation which we retained ownership of

The design Institute tried to find alternative methods of reproducing our models even resorting to hiring rendering companies to try and replicate the design. However without our original model and our input this proved impossible to reproduce.

Our method and strategy of retaining all the information within a single model was both efficient in coordinating and communication but also ensured the integrity of the project was maintained our involvement beyond what would normally be expected in China.

Context and Research Methods

COMPETITION

The research methods employed at the initial stages of the design were in a very large part led and directed by our local partners, We recorded through film and photography the city and having access through existing projects much of the hinterland and landscape beyond a highly significant influencing factor on why Chengdu exists.

We also had access to many politicians who were more than willing to give opinions and direction along with local artists/ poets who could give a more measured perspective we interviewed and provoked the director of the Museum to give a curatorial context and vision and responded to a number of his personal interests and collections which the museum was developing particularly the Shadow play collection which was the largest in China.

The daily life of Chengdu and the habits and customs were observed and recorded revealing the phenomena of 'grey space' the covered public space which allows for gathering in climatic extremes in Chengdu and the understanding that the city as a gateway to the mountains and the Himalayan trails is a haven and meeting point for many tribes and ethnic groups creating a multi diverse and vibrant city,

The view of a city or culture through foreign eyes is sometimes an advantage when observing and recording and this process was as revealing to our partners as ourselves and allowed for fruitful interpretations of our ideas into more culturally resonant expression.

POST COMPETITION

Post Competition the methods became much more exacting and about how to deliver a high quality building of a highly complex nature in a country which does not have a culture of precision

The design development became about how to be as strategic as possible to allow for the tolerances that may be required during construction and where to focus one's efforts to ensure that the best result could be achieved within the budget and programme.

The main area of research developed from the geometrical and physical issues related to the skin. The main structure for the building is a diagrid which follows the geometry of the outer skin and provides a column free interior which allows the 30 M free spanning spaces required by the exhibition halls.

Structurally the diagrid required that all the centroids of structure meet at the corners visually we also required that all the external visual planes meet at the corners it was also a requirement that the structure and the skin were parallel and within a certain range of dimensional variables.

This created a topological problem which had to be resolved and we employed Microstation Generative Components and Rhino to both explore how to achieve and to test and check that the parallel planes were within the dimensional range we also had to ensure that the centroid planes and the skin planes were all flat and fully enclosed and meeting precisely at every fold and corner.

The methods used to test, adjust and verify these parameters could only be achieved using parametric design and scripting tools.

Other methods employed to ensure quality and deliverability were largely to understand the limitations of the Chinese market and abilities of site operatives.

Research into ways of prefabricating the skin as much as possible would ensure the best result and much effort went into determining the best material, its manufacture and once it was established it could only be a European supplier how to ensure fabrication quality in China a great deal of materials research was carried out to establish the thickness and optimum size of panel.

-The outer carapace made from solid brass alloy panels, patinated to reflect the passing of time and the effects of weather, and alluding to the ancient bronze containers.

-This carapace wraps around a translucent 'veil' made from a perforated brass alloy mesh, giving the external skin an intense golden colour. At night the mesh becomes more transparent and transmits a golden glow alluding to the Sichuan tradition of shadow-play.

-The glass enclosure of the entrance foyer which will appear 'jewel-like', as if made of jade, as it nestles within the golden wrapping of the main body of the building.

Aims and Objectives

Chendu Museum raises three main questions and although an ongoing project has been sufficiently far advanced in the process to reflect on these issues They fall into three main areas the first relates to the general global phenomena of deigning and building far awy from our own context and our part in the process of cultural enlightenment in China

The second is more specifically how we can acheive this aim both technically and to maintain the standard of design quality through to realisation.

And lastly a case study into the technical challenges of the outward expression of the building and its identity the skin

These aims and objectives are summarised as follows:-

1. The Architectural challenges of designing museums in China - the cultural differences and the significance of symbolism.
2. How the we transfer information across the world adequately and retain control of quality.
3. The Skin - an study of geometry, materials and light

1. *The Architectural challenges of designing museums in China - the cultural differences and the significance of symbolism.*

The Contemporary Museum is a new typology in China. The legacy from Chairman Mao's cultural Revolution where wholesale destruction of the old was the corollary of the 'the great leap forward'

Many museums in China are designed around abstract ideas and do not necessarily contain artefacts as we might expect, and one can generally find a museum curating almost anything, and in many cases they are simply glorified retail stores. The Great tradition of the 'collection' which formed the basis of many museums in the West does not significantly exist yet in the public realm.

Outside of the first tier cities the provinces are largely bereft of any cultural institutions and the most significant buildings are either historic relics or Hotels or other commercial activities. The desire to create a new unique identity for these aspiring new conurbations is great and many new urban design proposals are centred around a civic core comprising the Party headquarters, an opera house and a city museum as a bare minimum

The pressures on these buildings to shake off the grey monotony of the communist era is so great and the desire for the mayor to make a name within the party, that these invariably take the form of the most exotic fruit imaginable and become very quickly a building of empty rhetoric and gesture without the content or substance to sustain a museum as we know it

The challenges we faced on arriving in Chengdu in 2007 were not entirely clear to us and our modus operandi was to approach the project like any other through thorough research and analysis and testing

It is clear on reflection that this 'innocence' to the bigger question of designing museums in China and the context and circumstances surrounding the acquisition of a new museum was clearly an advantage.

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2. *How the we transfer information across the world adequately and retain control of quality.*

3. *The Skin - an study of geometry, materials and light*

Context

4.0

The context for this project is the rapid changes that have taken place in China over the last 15 years and the role that foreign design companies such as ourselves have to play in this social, political and cultural revolution.

Research Methods

5.0

This passage will address the following

The logistics for carrying out this project are daunting.

dealing with distance - monthly flights, daily emails, 24 hour working because of time difference.

communication between the client, collaborators and various consultants and overcoming the cultural divide - the importance of dinner and drink!

Understanding the site and brief - site visits, client meetings, sketch models and drawings, transfer of information and the role of computer modelling, internet and infranet for efficient transfer of information

Dissemination

6.0

EXHIBITIONS

2007 The project was exhibited in the Mayor's Hall along with all the other competition submissions.

AWARDS

2007 International competition -First price

PUBLICATIONS

12.06.12 BD magazine - 'Sutherland Hussey's Chinese masterpiece takes shape' - article on project as it gets underway on site.

12.12..07 World Architecture News - 'Top prize for Sutherland Hussey' - article on competition win.

10.12.07 Scottish Architecture.com - article about the project.

06.12.07 Building Design Magazine- Sutherland Hussey's museum gem' - article on Chengdu competition-Page 2

06.12.07 The Architects Journal - 'Sutherland Hussey unveils China Museum' - article on Chengdu competition-Page 24

05.12.07 BD magazine - 'Sutherland Hussey wins Chinese museum in international competition' - article and images

03.12.07 The Times - 'Design sketched on a sheet of A4 wins £240m museum for Scots architects' - article on Chengdu competition-Page 24

Esteem Indicators**7.0**

In her publication for the British Council Penny Lewis (a lecturer at Robert Gordon University and architectural journalist) wrote the following:

“One interesting exception is Sutherland Hussey Architects, a practice of a dozen staff based in Leith; the majority of their work is front end design work in China. The two Charlies, the founding partners, were educated at the Mackintosh School of Architecture and worked for James Stirling and Michael Wilford in London before setting up practice in Scotland in 1997. The work closely with Pansolution, a young Chinese practiced formed by students from Beijing’s Tsinghua University. In 2007 SHA and Pansolution won the competition for a 70,000square metres city Museum for Chengdu, the capital of Sichuan, a large province in central of China. The £240 million museum, which is currently under construction forms one side of the city’s central Tian fu square. Although SHA is not supervising the work they have had more control over the development of the project than is common. SHA is responsible for the conceptual co-ordination of the design, the detailed production drawings are produced by the Chinese for the local construction industry which is becoming increasingly technically skilled, SHA provide tectonic principles, a guide to how the skin should be detailed. The practice is working on a number of other projects in Chengdu, the City Mayor has commissioned them to produce a city development plan and they have master-planned a New Town to the East of the city, drawing on some urban design traditions developed through the Enlightenment expansion of Edinburgh. A good working relationship with Pansolution gives SHA a particular insight into Chinese client’s expectations. The Chinese understand the European sensibility in particular SHA’s interest in working at a particular scale and the making of streets, an enthusiasm strongly associated with the Mackintosh School in Glasgow.

“Our belief is that architecture is always driven by context” says Hussey. “China is a leap into a whole other context in the broadest sense of the word. Unlike European modernist design, Chinese projects often start with little in terms of programmatic demand, urbanistically and sculpturally there is a huge emphasis on visual impact. China has a very sophisticated visual culture. It’s clear from their calligraphy that this is a country that loves symbols and symbolism.”

Location



Sichuan Province in relation to China



Sichuan Province



Chengdu City

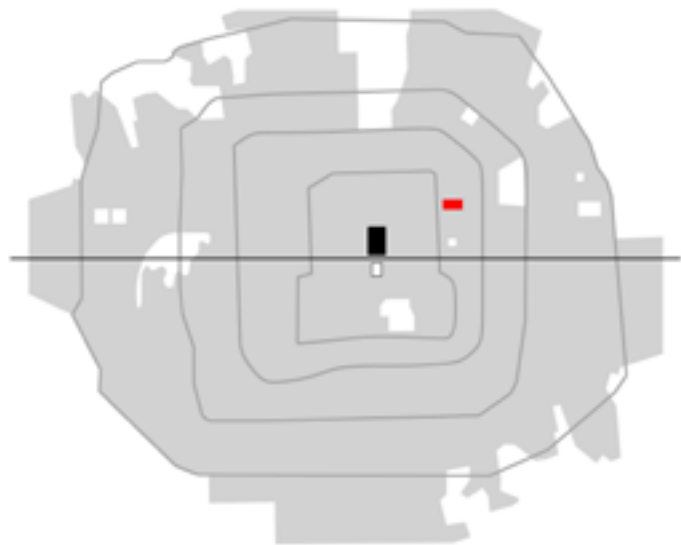


Arial view of the site and its surroundings

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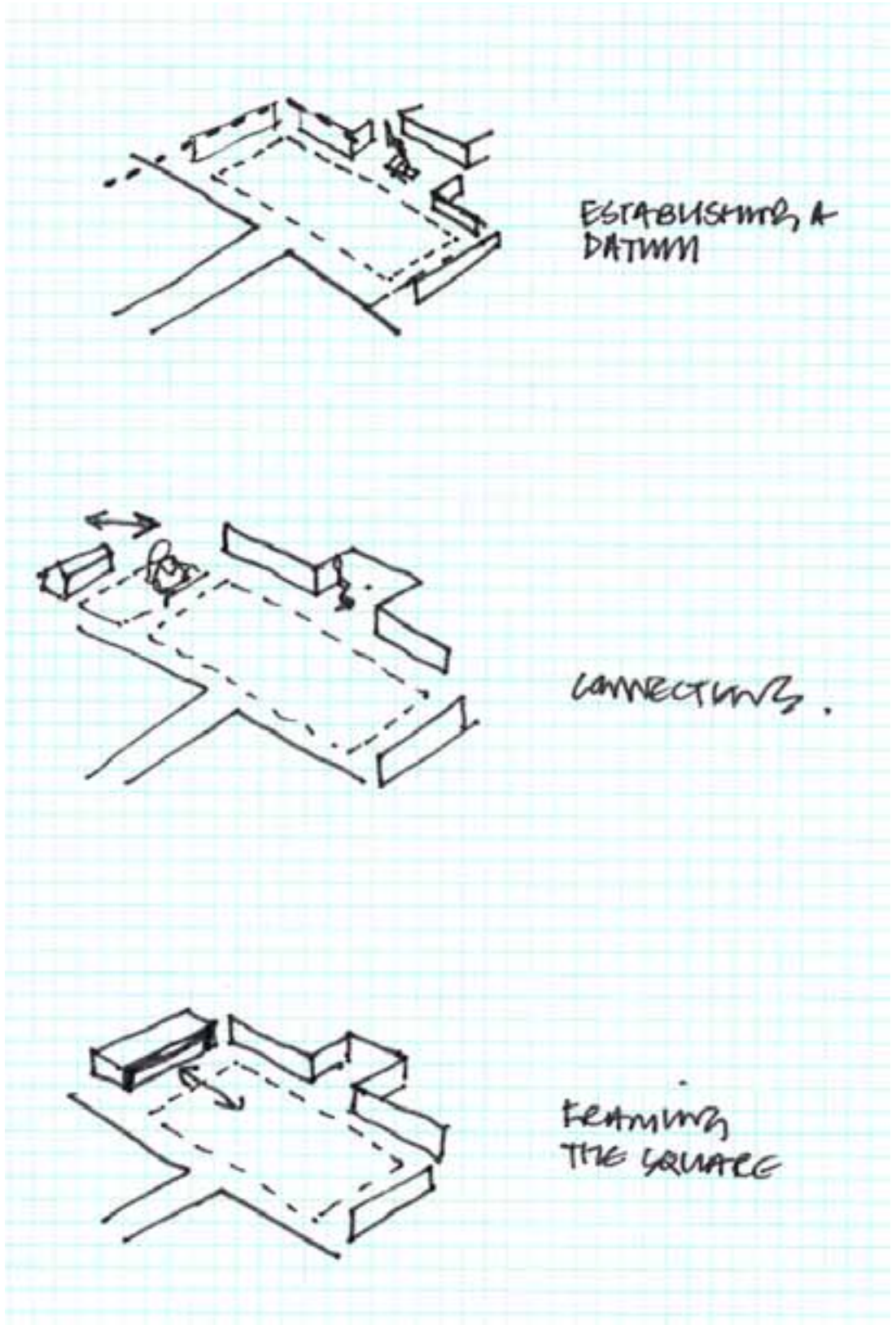


Tian Fu Square



Diagrammatic organisation of Chengdu City

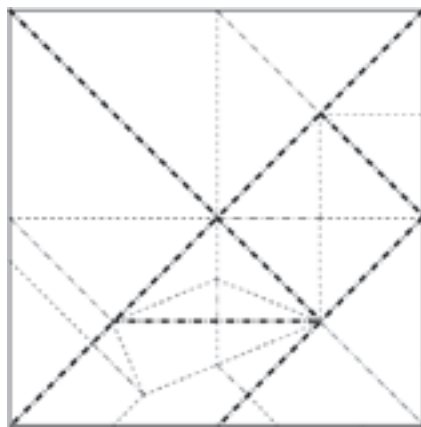
Strategy



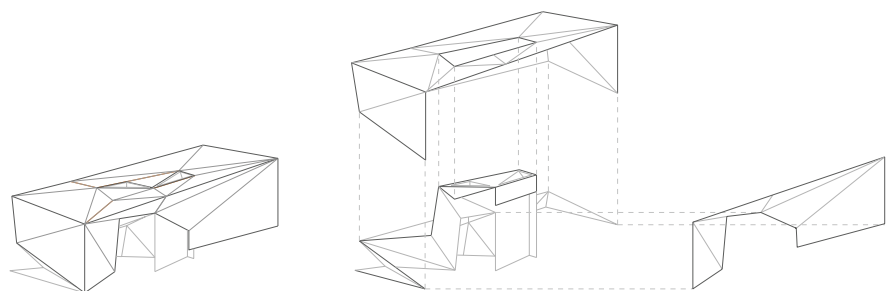
Concepts



Site Concept

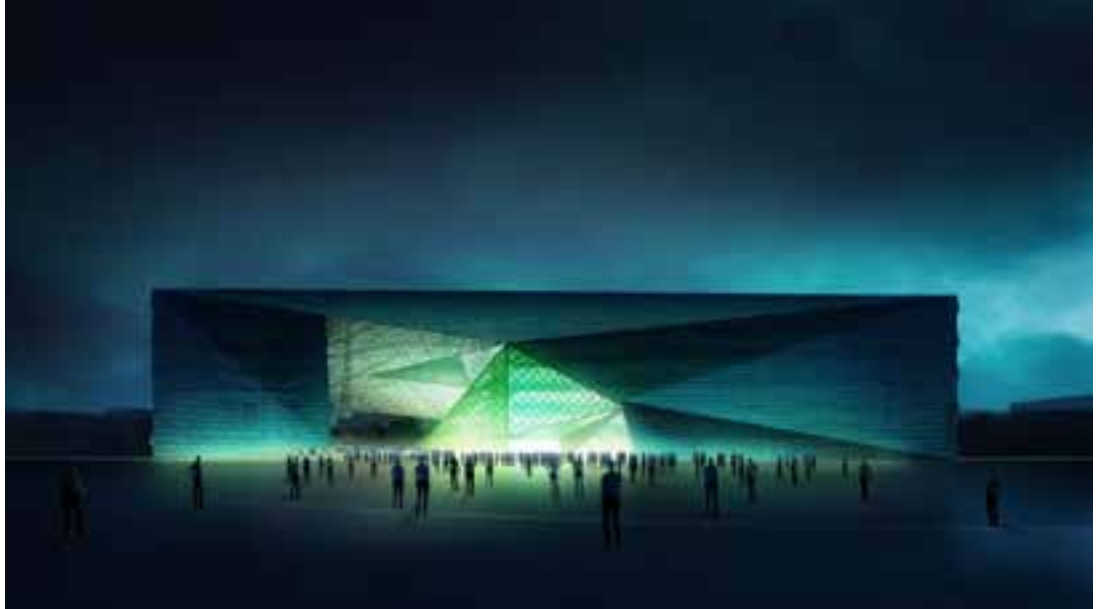


The Tangram



The Folded skin

Competition images

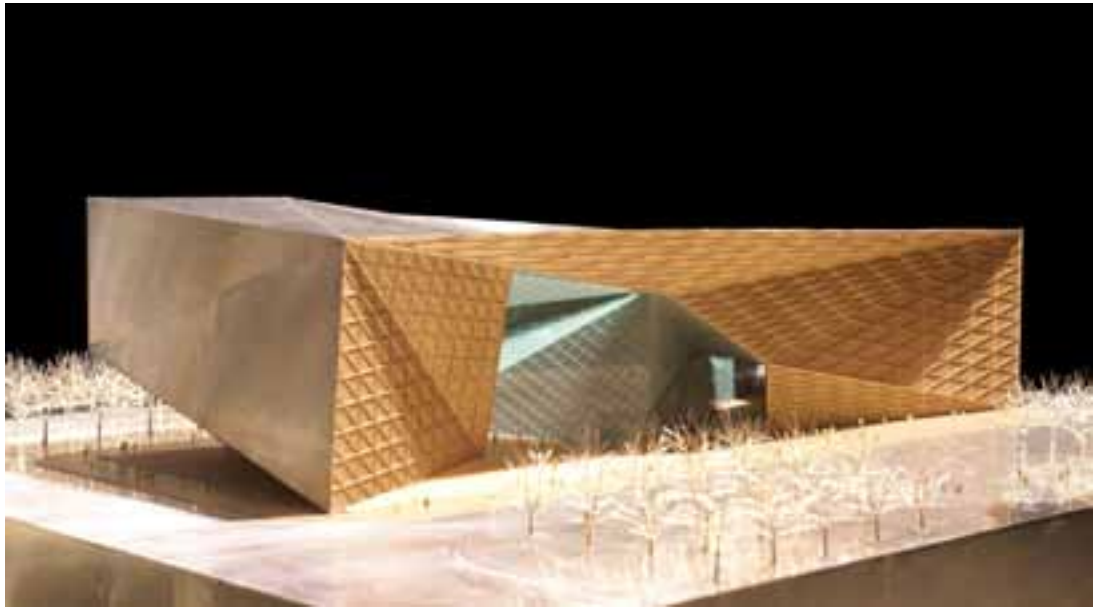


Competition entry CGI night view

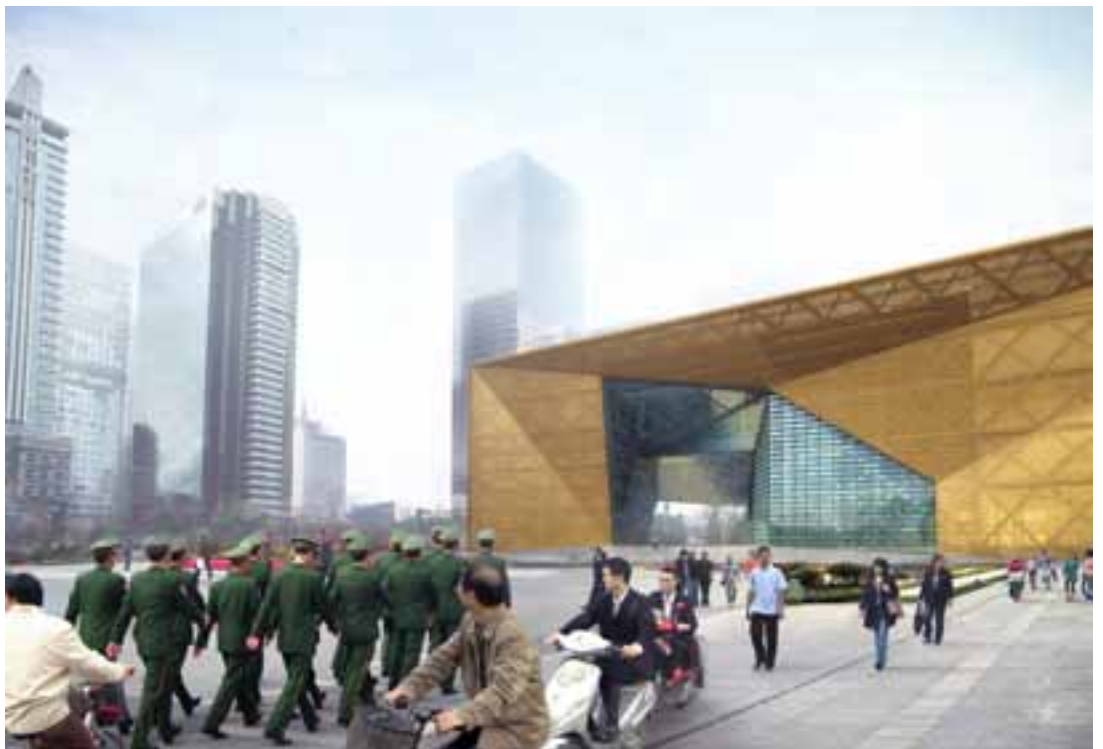


Physical Model night view

Early Computer study and model



Competition submission concept model

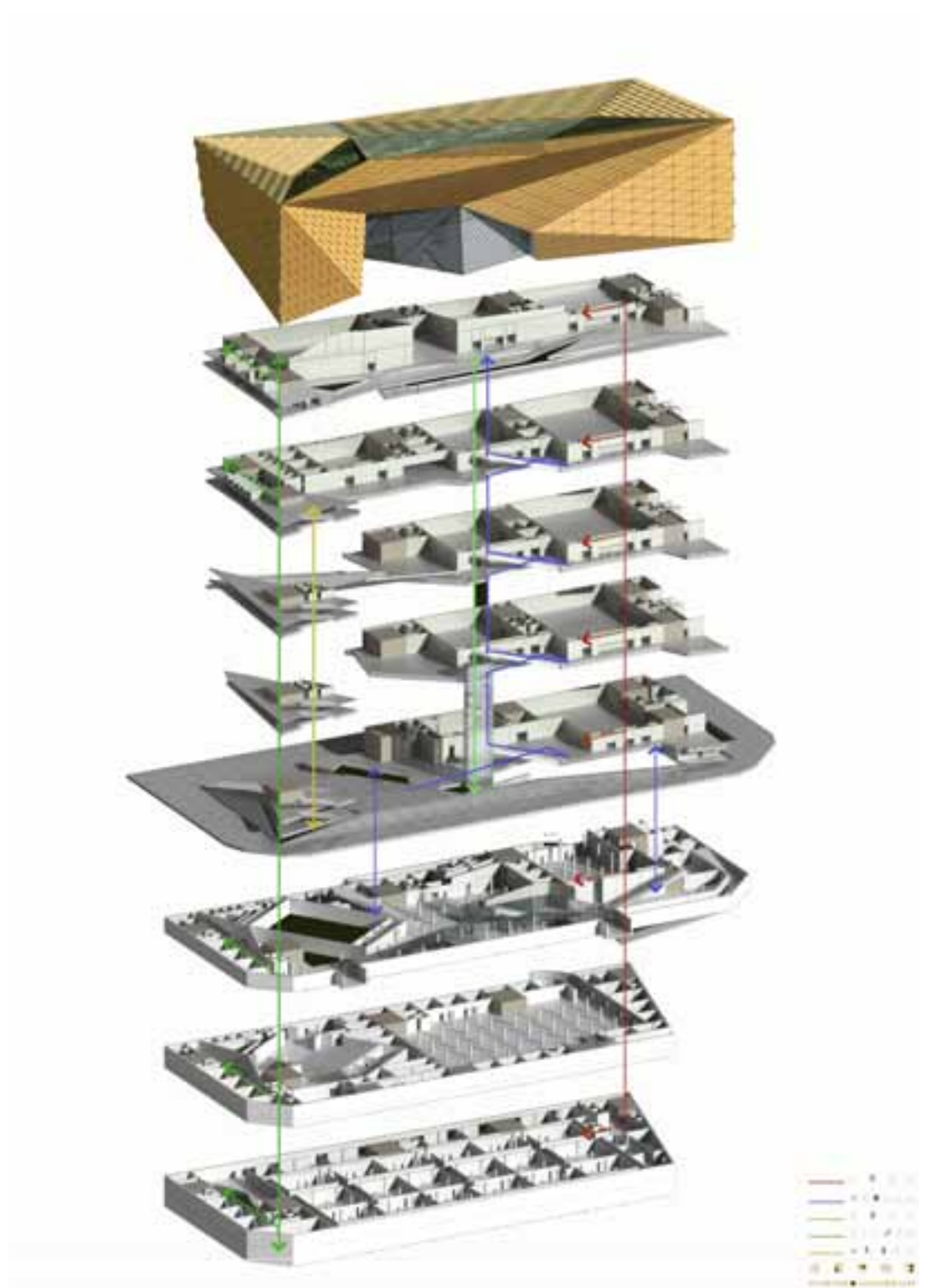


Competition submission perspective from square

Early design drawings



Elevation and section studies



Exploded isometric

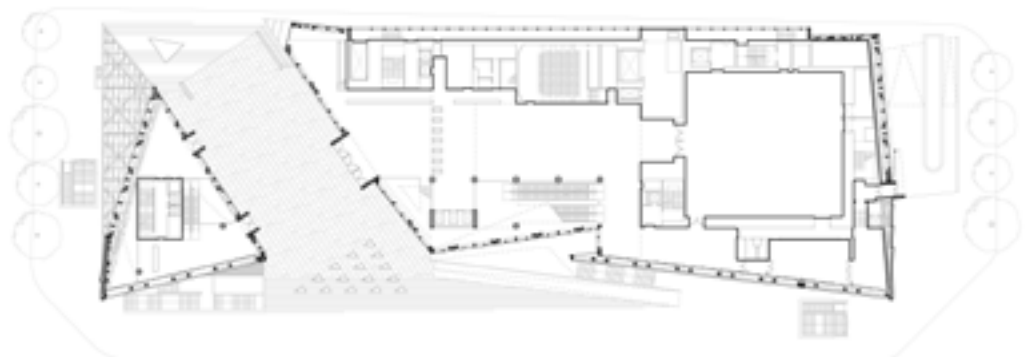
Detailed design drawings



Upper level plan

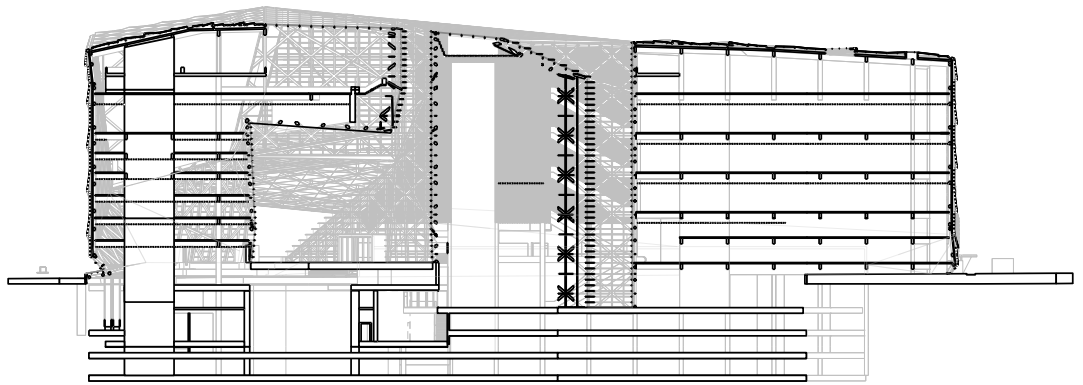


Third Floor plan

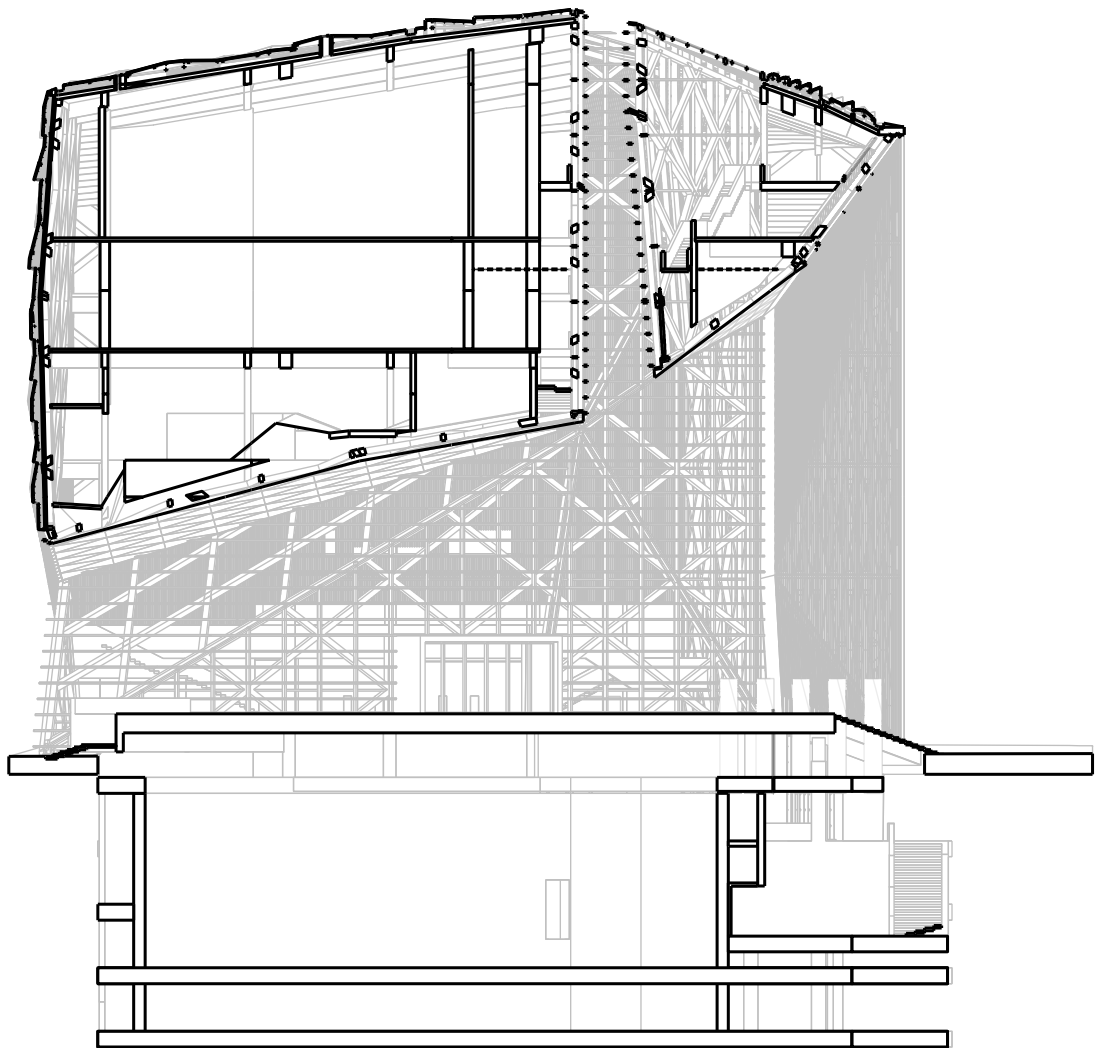


Ground floor plan

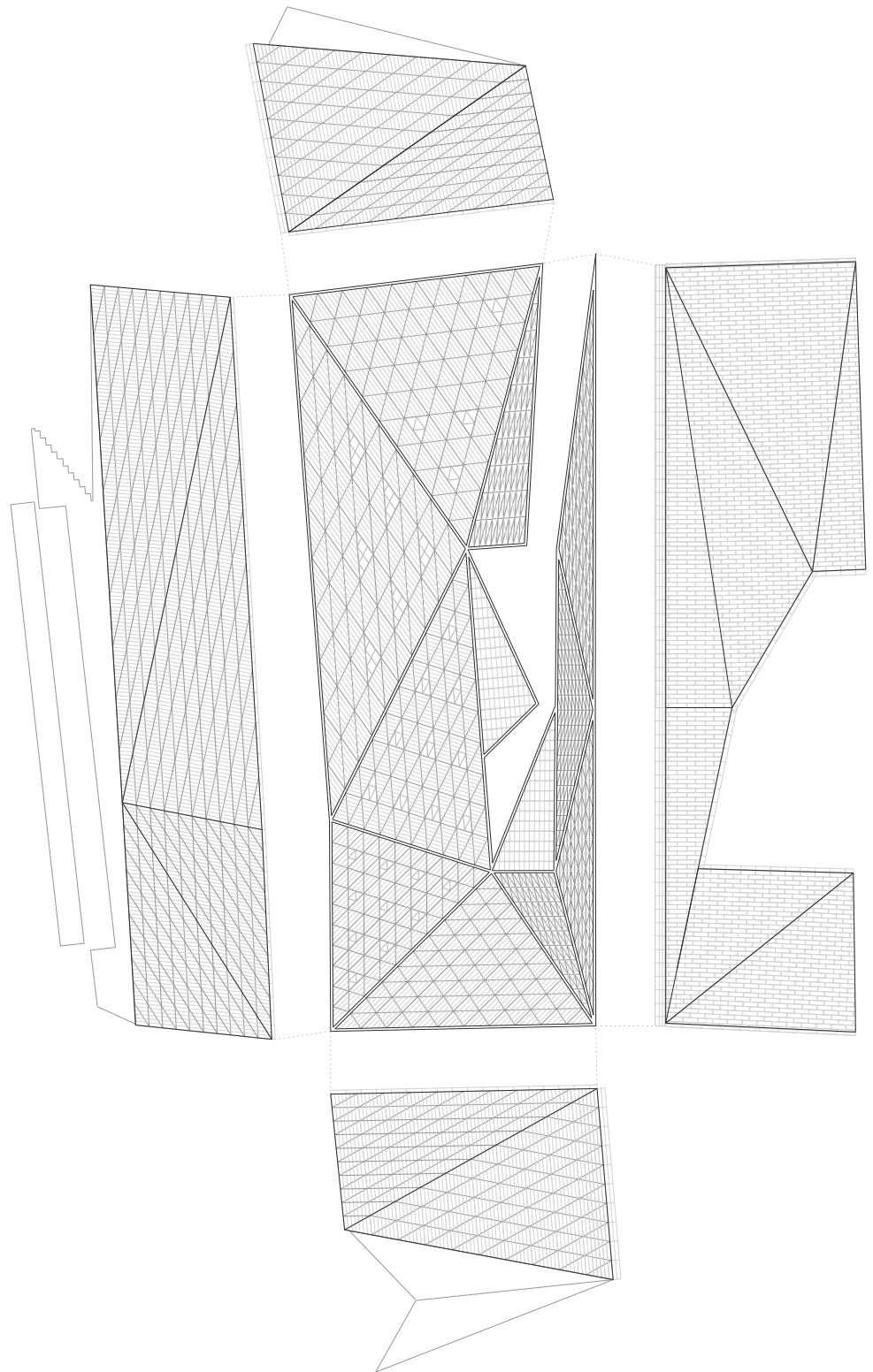
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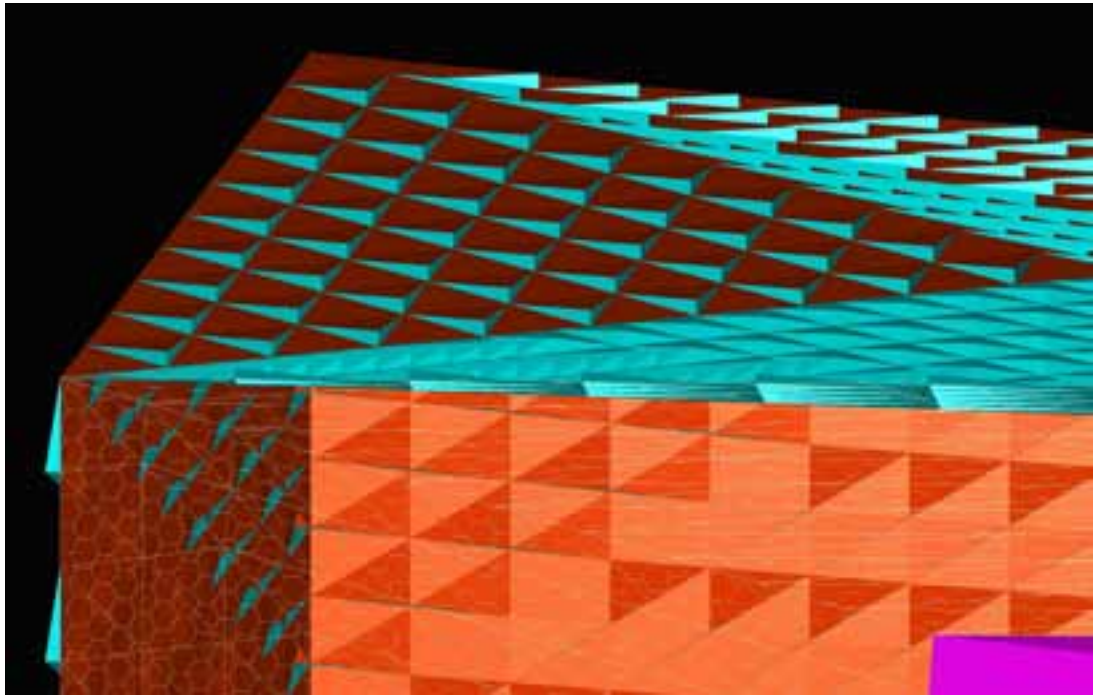
Long Section

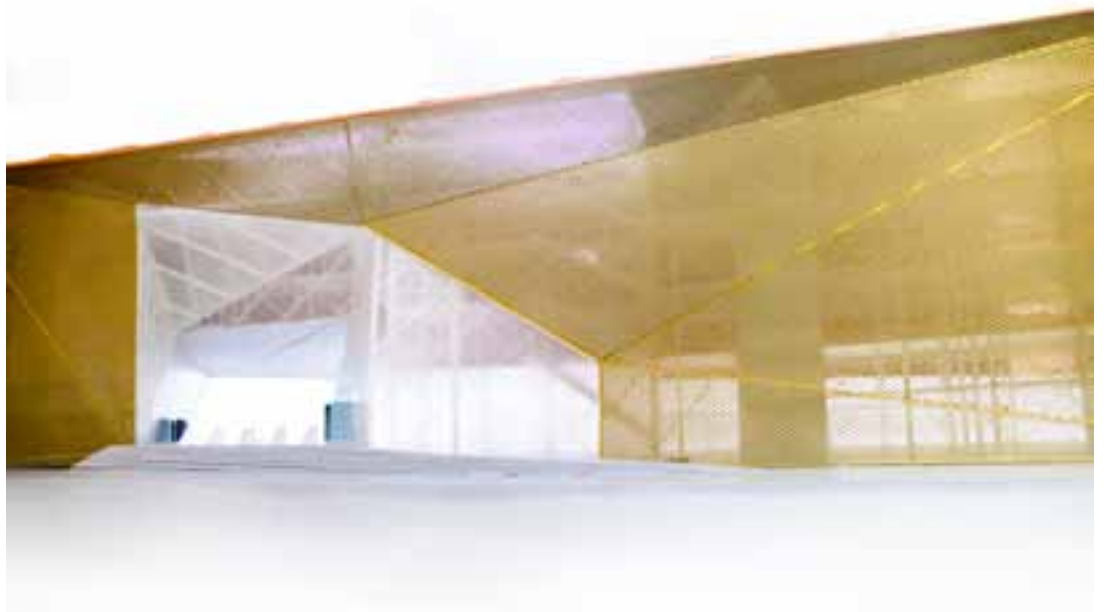


Cross Section



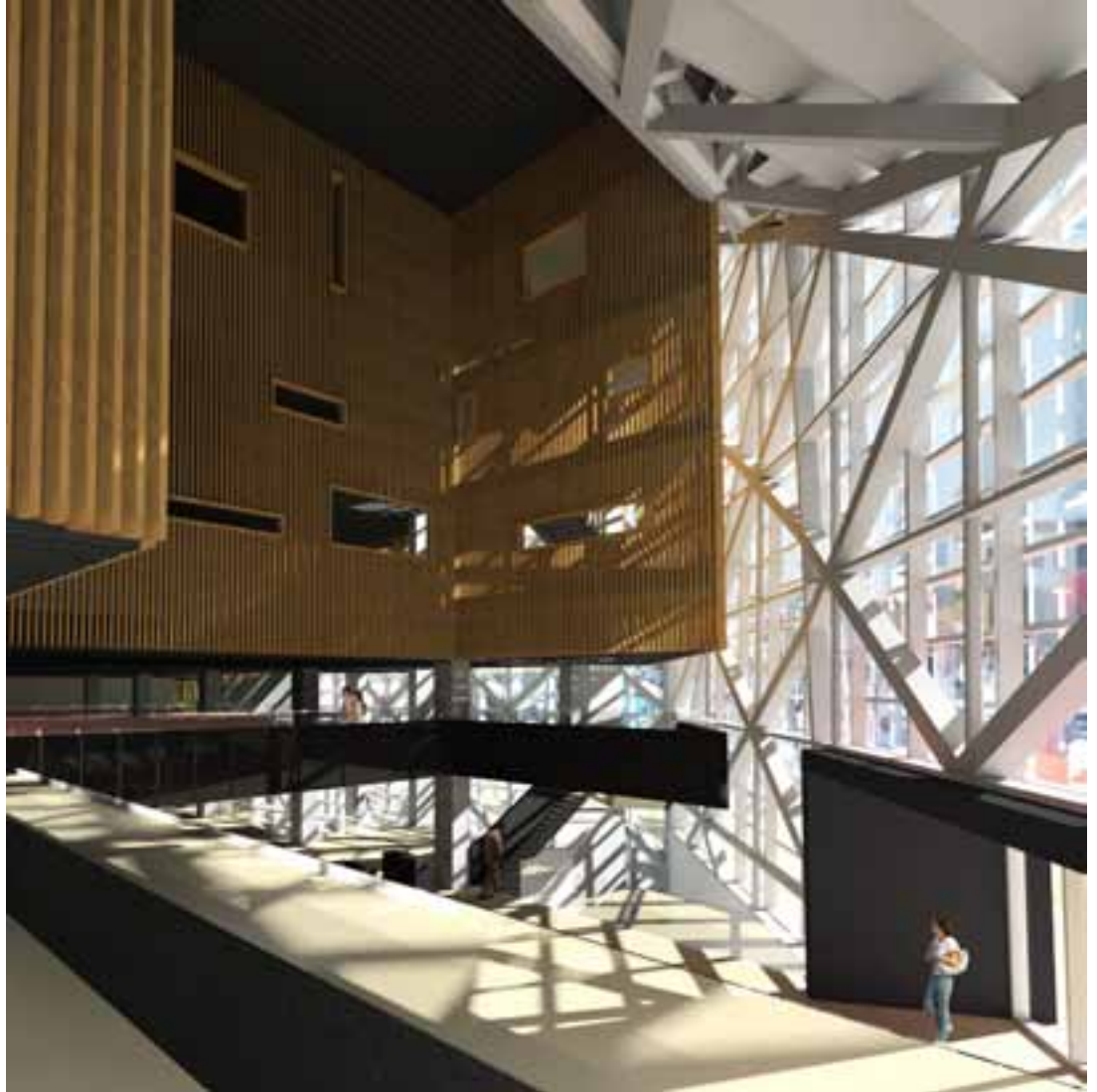
The Skin





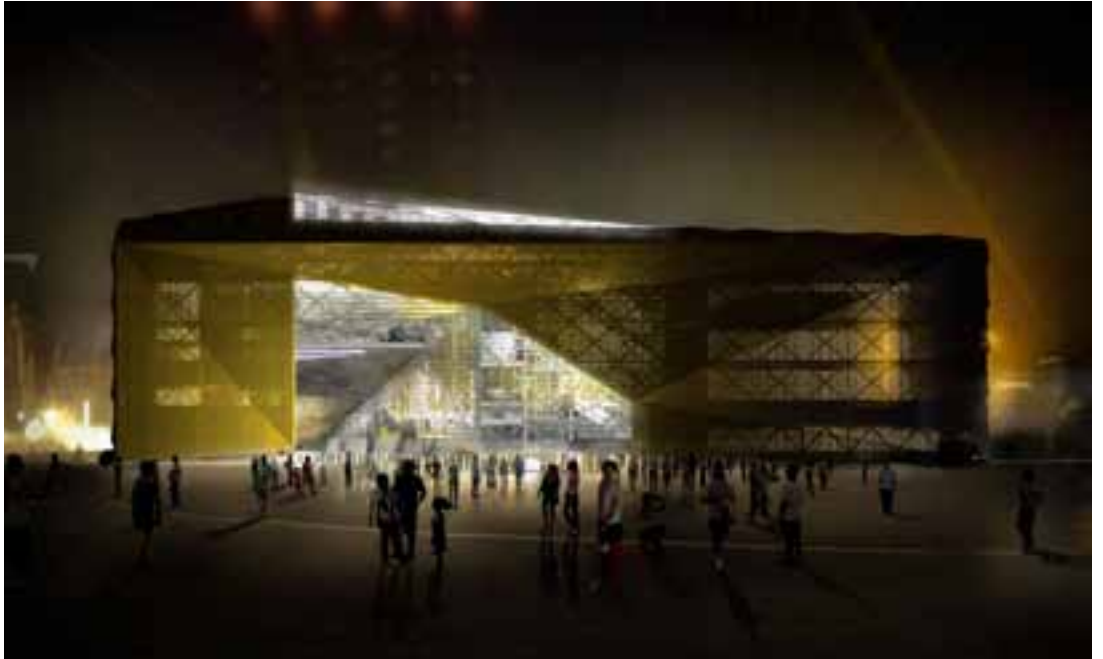
The Skin - Model studies

Final Computer images



Interior view of Entrance Hall

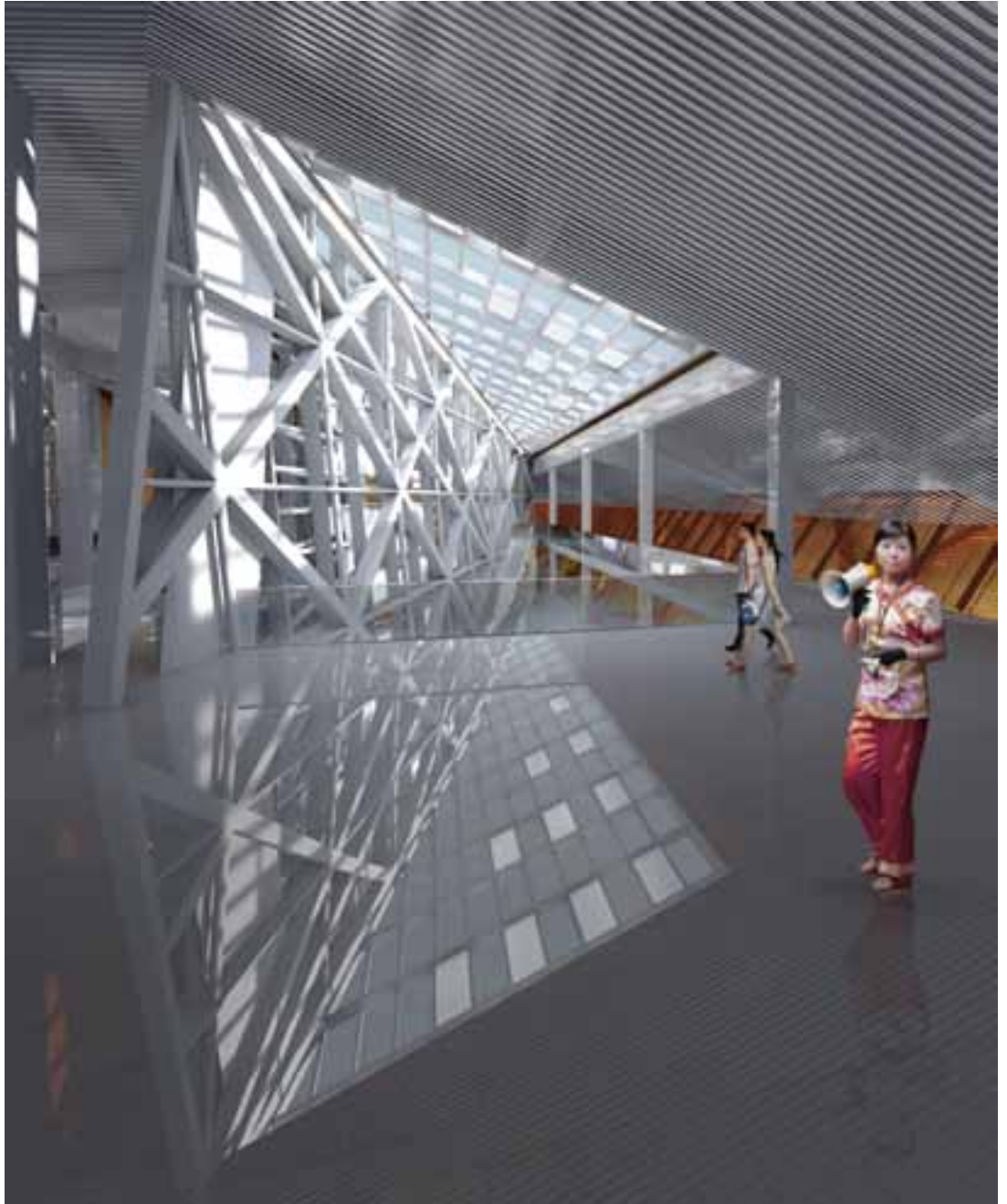
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Night view from square



Interior view of Entrance Hall



Interior view of upper foyer

Construction on site





Views from approach

General Description

1.0

Project Details

Date: 2007-2012

Location: Chengdu, Sichuan, China

Project: Design of a new City Museum for Chengdu

Contract value: £240m

The Project:

Sutherland Hussey Architects, in collaboration with Pansolution International Design, were awarded first prize in the Invited international competition for the design of the new City Museum for City of Chengdu, Sichuan, China.

The Museum requirements extend to over 65,000m² of development and will include exhibition space for Natural History, History and Folk, and Chinese Shadow Play as well as international standard Temporary Exhibition halls.

The Site:

The site for the new City Museum sits along the full extent of the west edge of Tian Fu Square. It is approximately 180 metres long and 70 metres wide and is separated from the main Square by a five lane road, lined with large, mature trees. It is a hugely significant site, forming the western edge of the most important central Square in the city. To the North the Statue of Chairman Mao guards the entrance to the Science Museum and addresses the main north-south axis which bisects Tian Fu Square. The new museum will form the centrepiece of the new cultural quarter in Chengdu comprising a new Central Library located at the Northwest corner. The opposite North East corner will sit the New Concert Hall for the City.

Project Description:

The New City Museum will be the most important new cultural building in Chengdu and needs to assert itself on the Tian Fu Square against a backdrop of ever-increasing commercial development. As part of our overall masterplan for the square we proposed an agreed datum corresponding to the adjacent Mayor's building be established for three sides of the square, whilst along the southern edge, commercial developments are allowed to go significantly higher. With this in mind our proposal obeys strict adherence to a 36 metre datum along the full length of the front façade.

The proposal includes the creation of a new undercover outdoor space opposite the Mosque (which is situated to the rear of the site) - a monumental opening through the building, offering a large, covered outdoor space opposite the City Mosque where people can gather, cultural events can take place, and the market stalls can extend into, with the intention of giving the Mosque a large civic forecourt appropriate to its cultural status.

Aside of an interest in the urban condition we were also intrigued by the importance of symbolism in Chinese culture - that the architectural language should not just be a manifestation of a set of functional requirements (as it so often is in European architecture) but also should have symbolic value. We became interested in the historic artefacts of the Sichuan province and the use of precious materials such as gold and jade.

Jade is a stone ingrained in Chinese art, culture and history, stretching 9,000 years back into the ancient and enormous Chinese empire. Jade has always been a special stone, used not just for fine objects but also as material for grave goods for the imperial family. It is believed to be a link between both the physical and the spiritual worlds, and is the only material that completely encapsulates both the yin and yang qualities of Heaven and Earth, earning it the moniker The Stone of Heaven. Likewise Gold as well as the golden colour has always been considered to be a symbol of lavishness in the Chinese culture. We developed our proposal to encapsulate these two qualities: