

凤凰空间·上海 编

交通枢纽

ARCHITECTURE FOR

TRANSPORTATION

江苏人民出版社

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ARCHITECTURE FOR **交通枢纽**
TRANSPORTATION

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伴随着“全球化”的进程，不论是在材料使用还是整体设计上，火车站的设计者们都力求更快捷更智能，同时兼顾环保和低碳。然而在“全球化”的背后，地域风格仍保持着强大的张力，时时提醒着人们：建筑同时也作为一种文化而存在。

During the progress of globalization, train station designers are striving for greater efficiency and intelligence in both material utilization and overall design, and meanwhile taking environment protection and low carbon into consideration.

Nevertheless, regional style as a powerful factor still plays a significant role, which constantly reminds people that architecture is also a kind of culture.



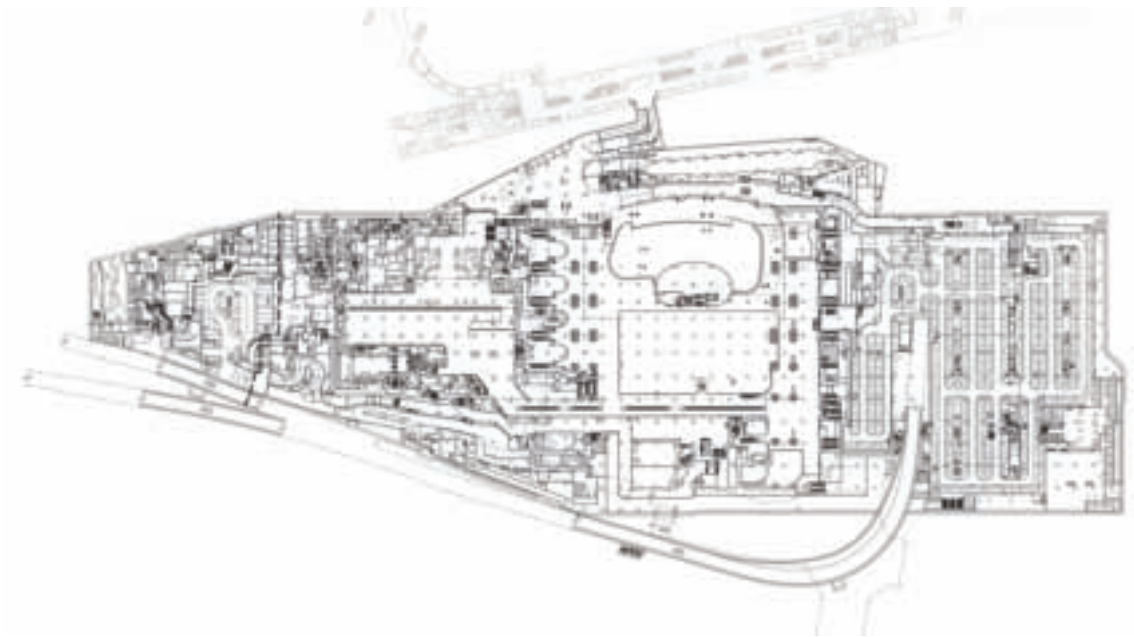
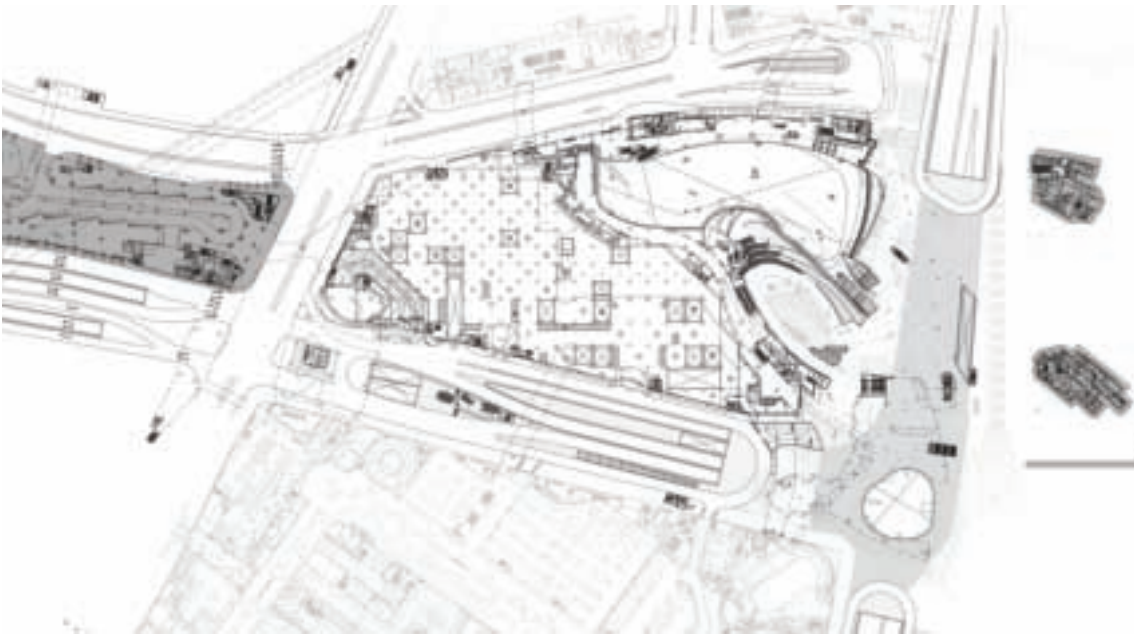
Credits:

Designer: Andrew Bromberg of Aedas
Structural & Environmental Consultancy:
Buro Happold, Hong Kong
Client: MTR Corporation Hong Kong
Project Manager: Aecom
Structural, Fire Safety, Civil and Geotechnical Engineer:
Aecom
Architect: Aedas
Building Services Engineer: Meinhardt
Structural Engineer, Façade Performance:
Entrance Building Buro Happold
Sustainability Consultant: Buro Happold
Landscape Architect: EDAW
Quantity Surveyor: Widnell
Traffic and Transport Engineer: MVA
Rail and Transport Planning Advisor: Systra

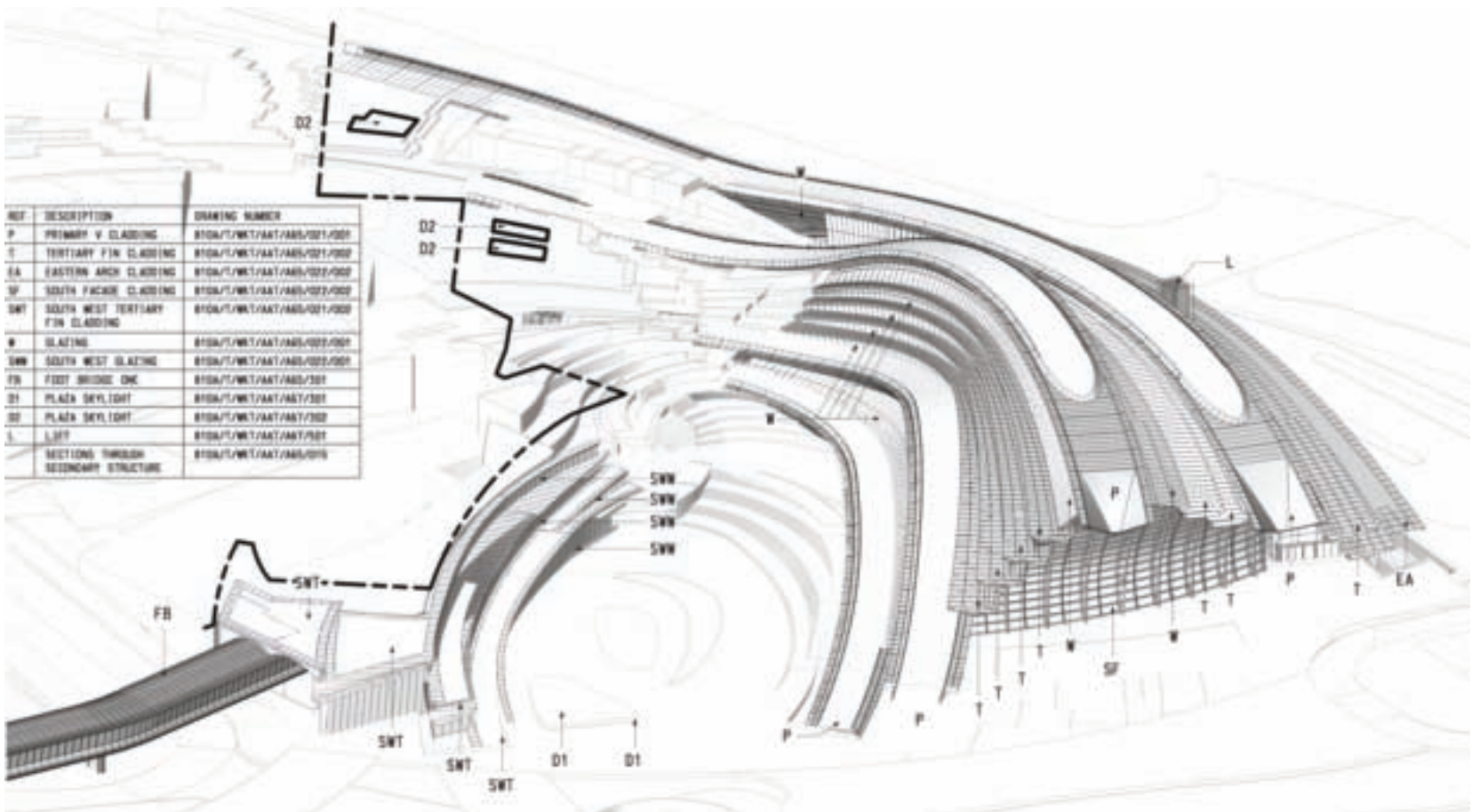
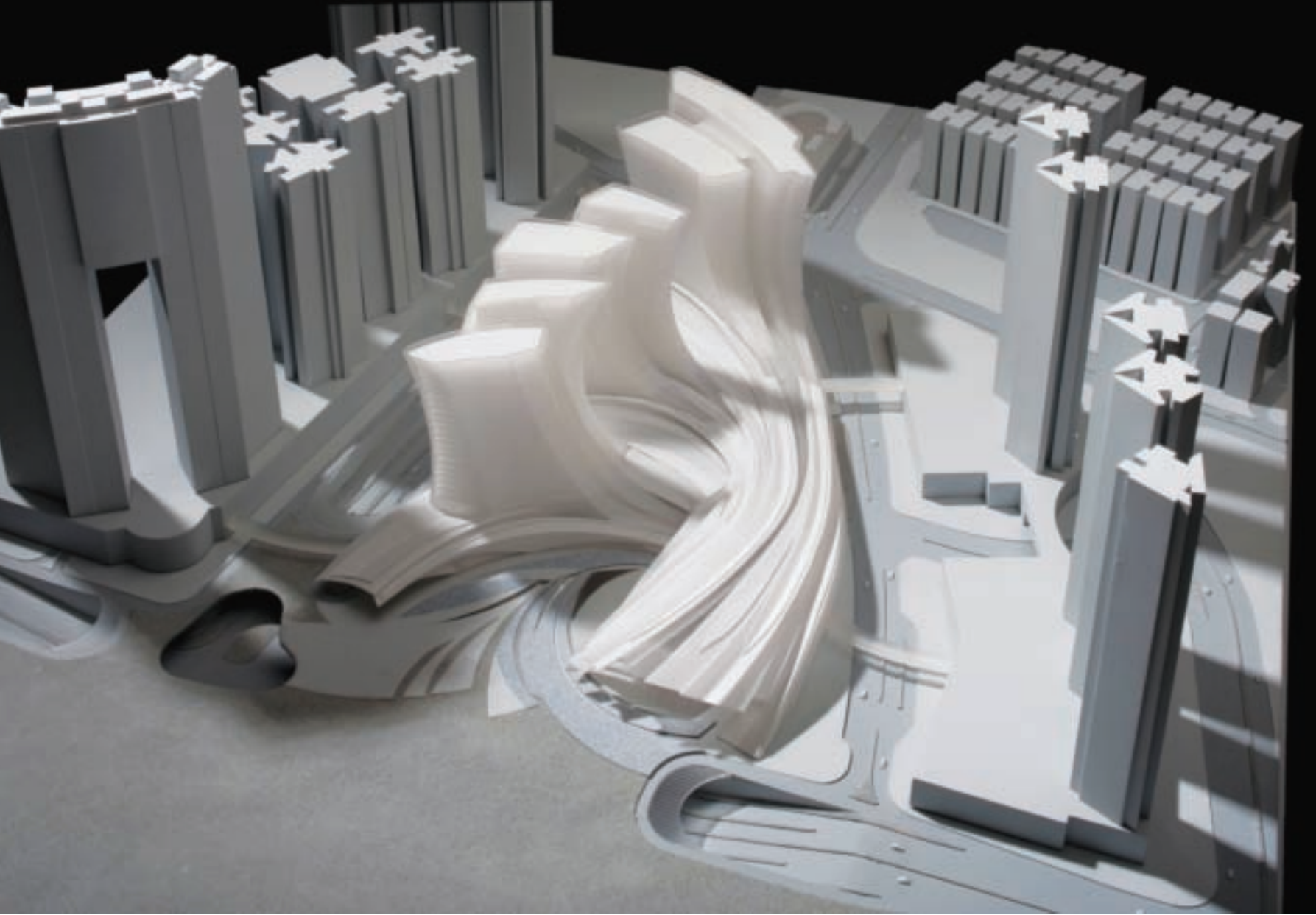


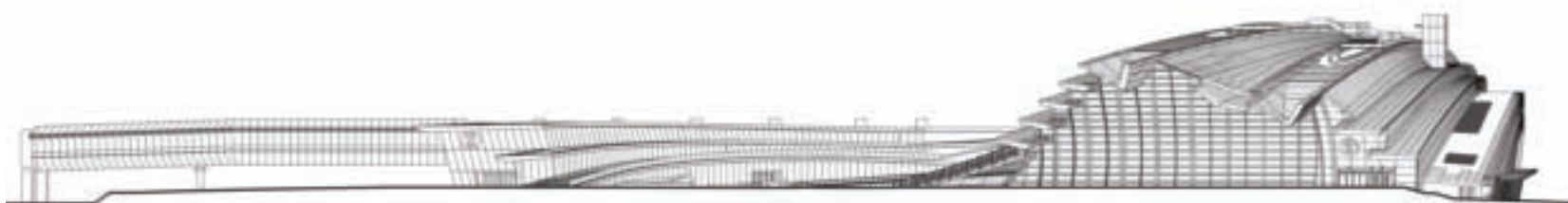
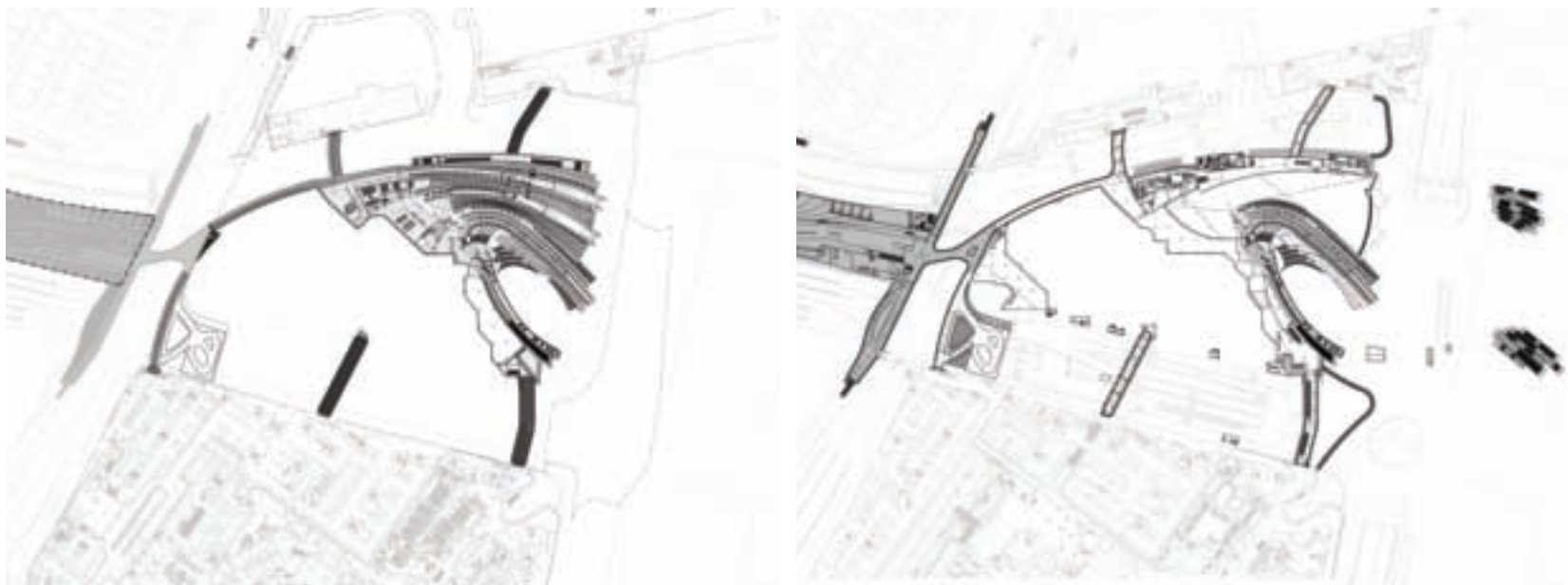
W 西九龙总站 Aedas est Kowloon Terminus











这个高速铁路总站连通香港与北京，是我国历史上最大的铁路运输网络。它坐落于香港的城市中心地带，占地 430 000 平方米，设有 15 个轨道，将成为世界上最大的地下总站。

西九龙总站的功能更像一个国际机场，而不仅仅是个火车站。因为香港特别行政区的经济和政治与内地不同，这就意味着运行设施需要有对出入境的旅客进行管理的部分。

该位置邻近于未来的西九龙文化区和维多利亚港，需要一个能高度迎合公民需要的设计。另外的挑战是在车站上方建造一个 400 000 平方米的商业开发区，将在今后拍卖给开发商。

作为香港的“门户”，它被认为是连接周边城市环境至关重要的车站，无论出和入，都能感受到城市的特征。为了做到这一点，设计压缩了支撑物所占的空间，使大厅留出了更多的空间到达轨道站台。外部结构沿大厅和屋顶方向向下弯曲，直至海港，最终造就了 45 米高的庞大建筑，将所有的注意力吸引到南面——那里拥有香港中央天际线、维多利亚山及更高的视野。

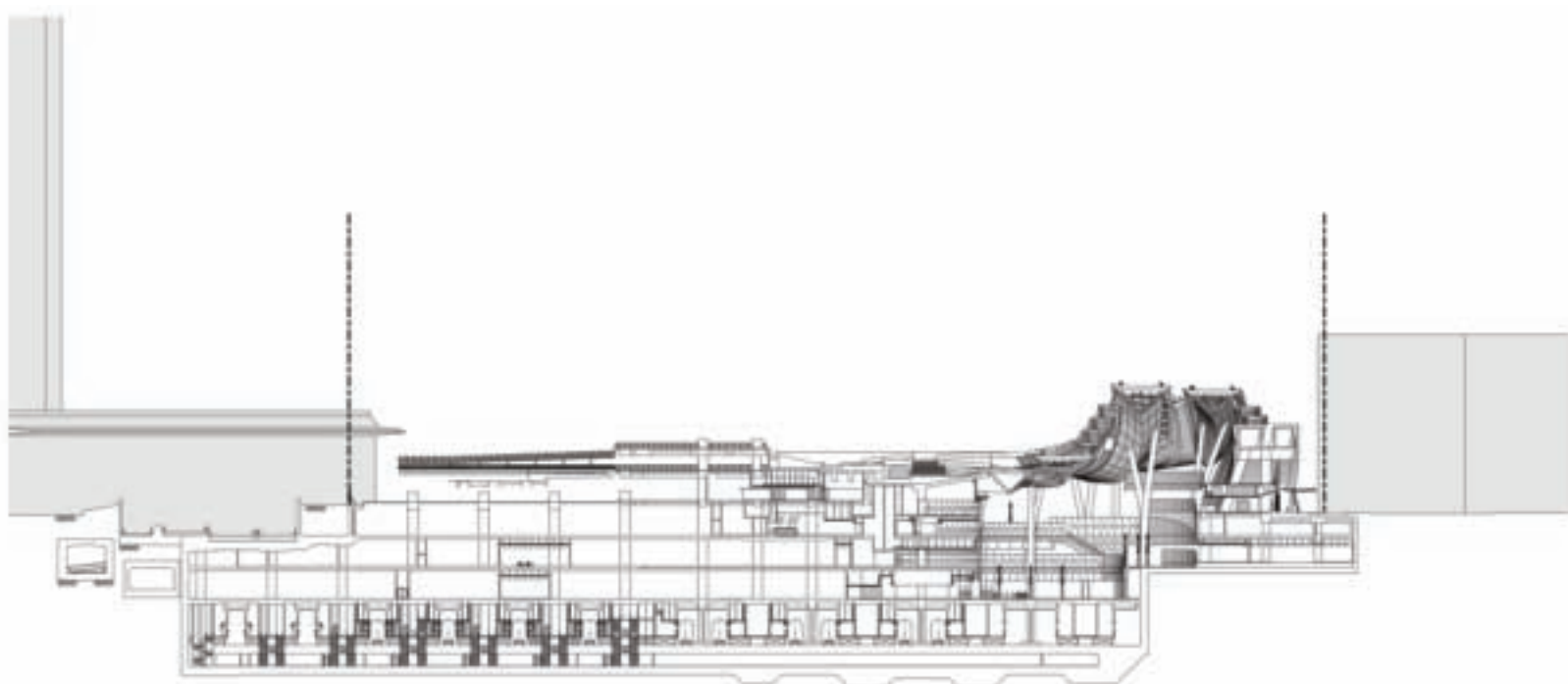
总站站区有通勤列车和长途高速列车。通勤列车穿越香港到深圳——一个蓬勃发展

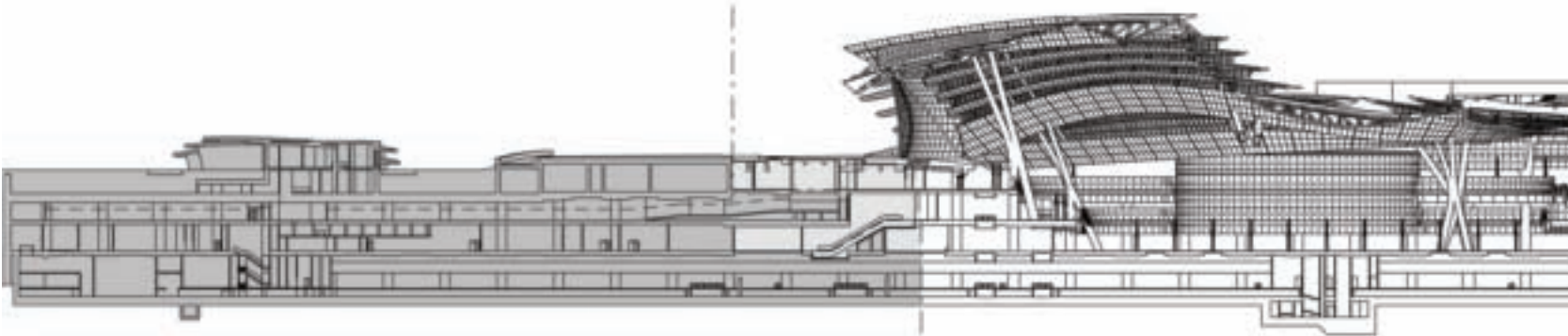
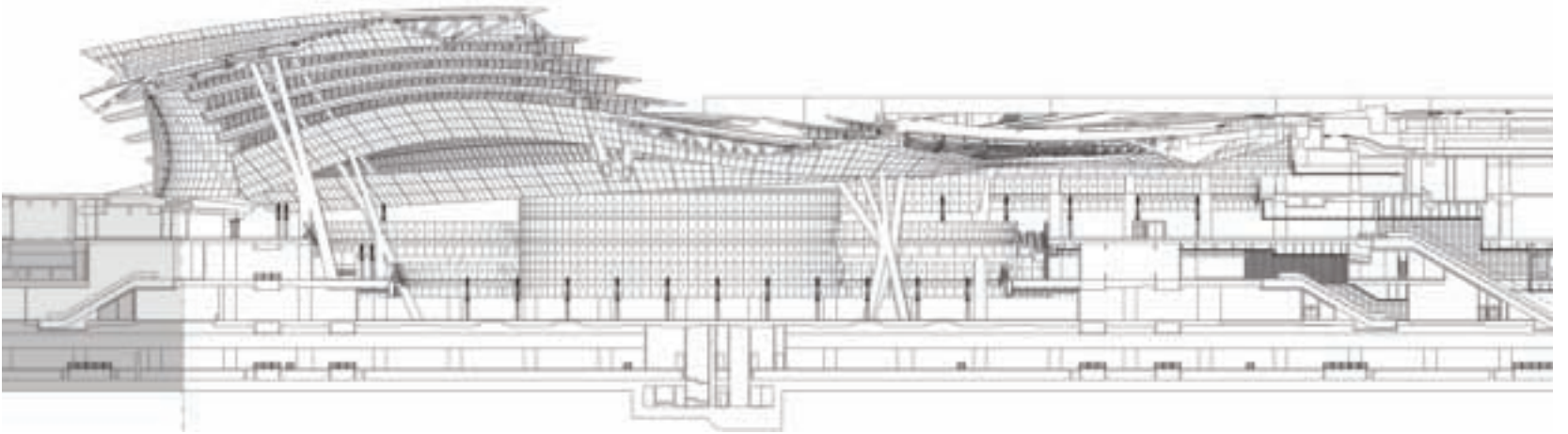
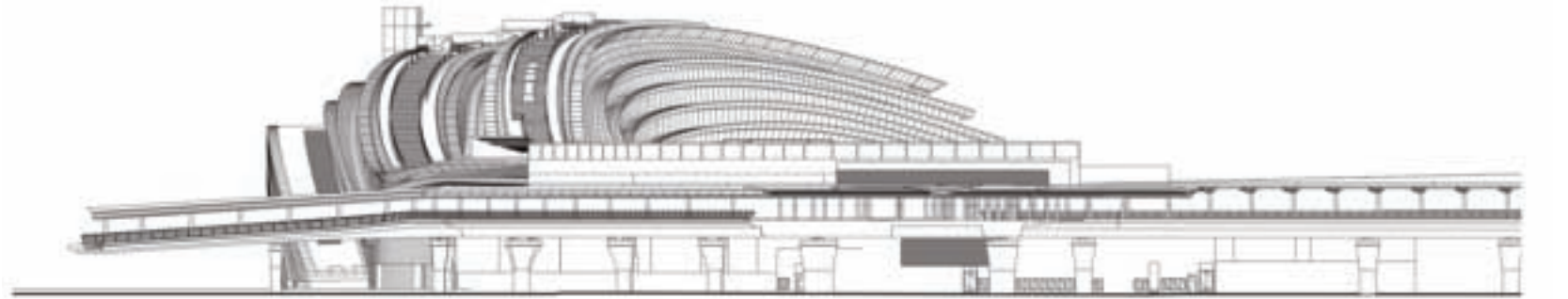
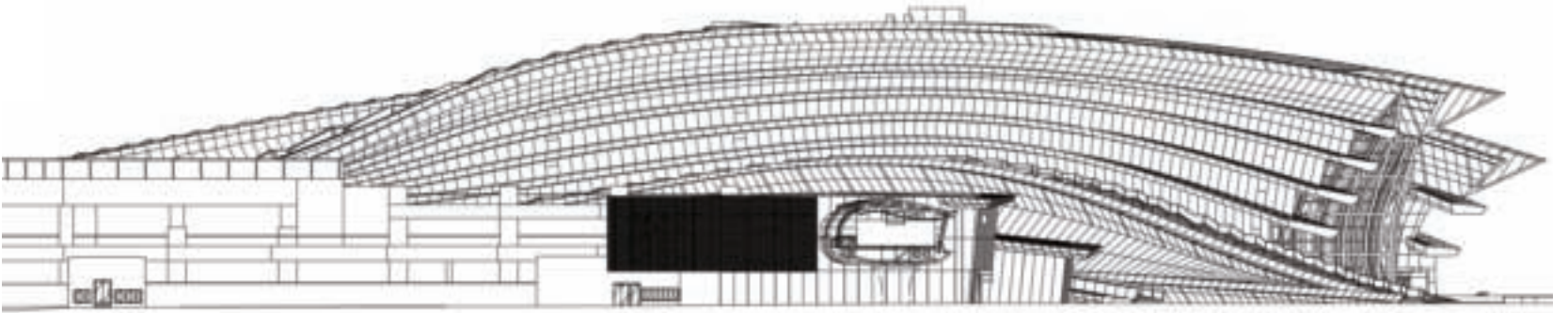
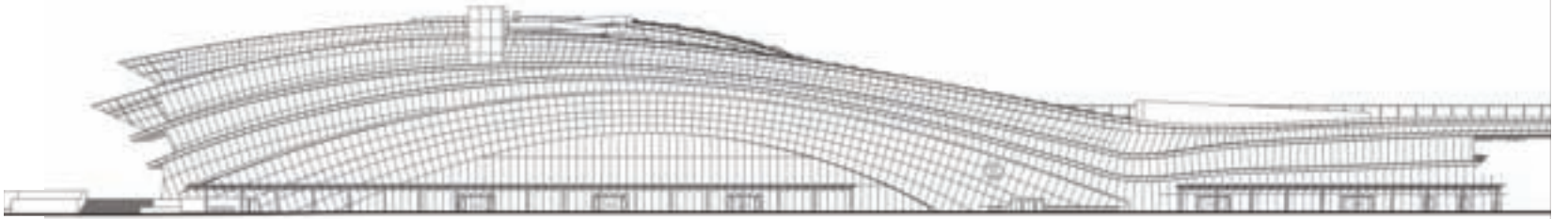
的中国边境城市，更北边到广东的省会广州。进行土木工程研究得出结论，基于城市规划和内部位置的限制，短途轨道需要被放置在西面，长途轨道放在东面。因此这些轨道的位置就这样固定。此外，研究表明，80% 的车站使用者是短途乘客，迫使设计尽量减少这些乘客的乘车时间。

该站雕刻出了这些特征的活力，并且将设计的重点确定在维多利亚港和香港的天际线上。西九龙文化区也被建设在该区。大型的“市民广场”将面朝文化区开放，在另一边则有其自己的户外露天剧场。

步行道一直延续到该站的屋顶上方，那里有一个高度植被化的雕塑园，绿色延伸到屋顶下面。由此产生的开放空间是总体规划中的近 5 倍。这个绿色空间北接公共交通换乘处、东接奥斯汀地铁站、西接九龙站发展元素购物广场、内部连接到西九龙总站本身和在其上面的商业区。

即使发展的成功独立于该项目的整合，该区的商业发展也力求在规划上融入整个项目。市民广场车站入口和其他设施在东、西两侧，邻近的小道也能通往总站的顶上，进入绿色“屋顶风景”。





The high-speed rail terminus station will connect Hong Kong to Beijing with the largest rail network in our history. Located centrally in Hong Kong within the city's urban realm, the 430,000 square meter facility, equipped with fifteen tracks, will be the largest below ground terminus station in the world.

The WKT will function more like an international airport than a rail station as the Hong Kong Special Administrative Region maintains economic and political differences from P.R.C. This means that the facility needs to have both custom and immigration controls for departing and arriving passengers.

The site's proximity to the future West Kowloon Cultural District and to Victoria Harbor required a design which was highly influenced by civic demand. Adding to the challenge was the construction of a 400,000 square meters of commercial development on top of the station, which would be auctioned off to a developer at a later date.

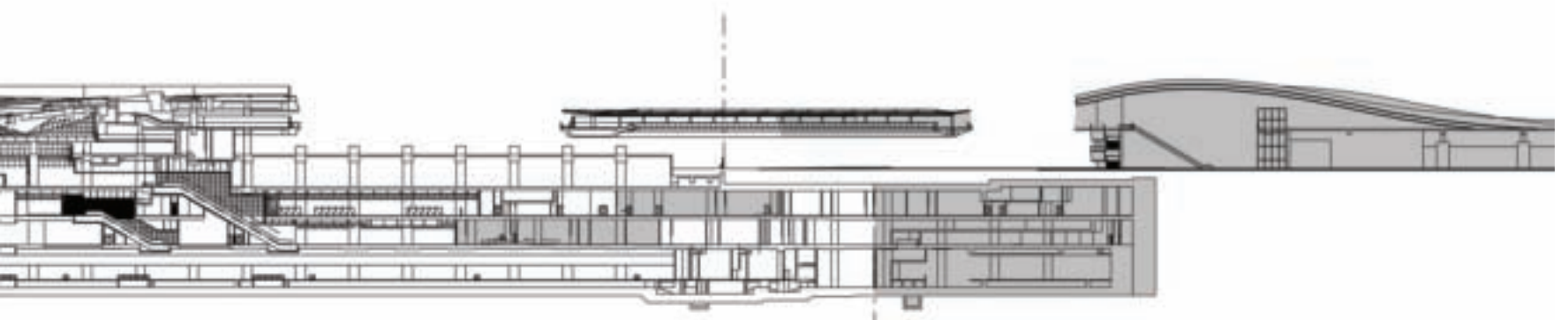
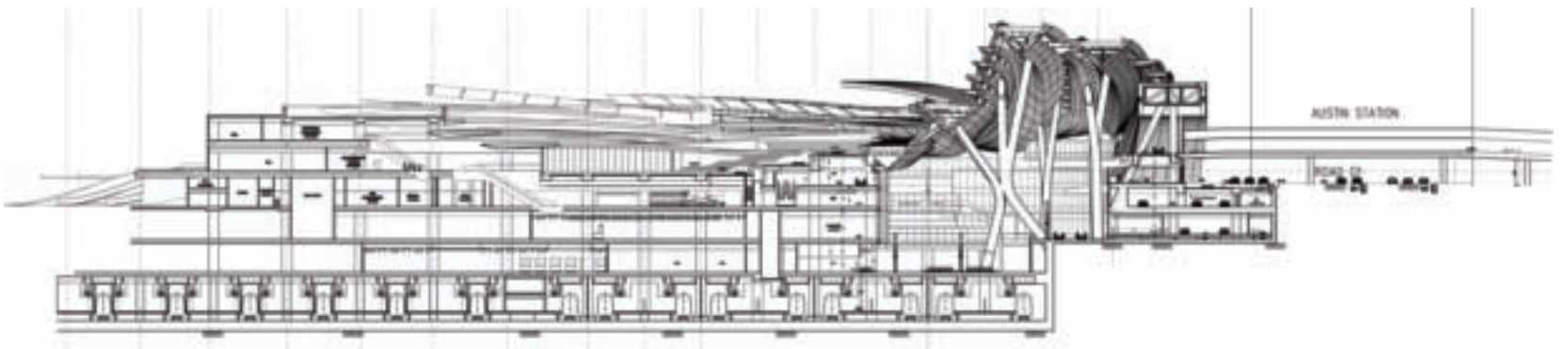
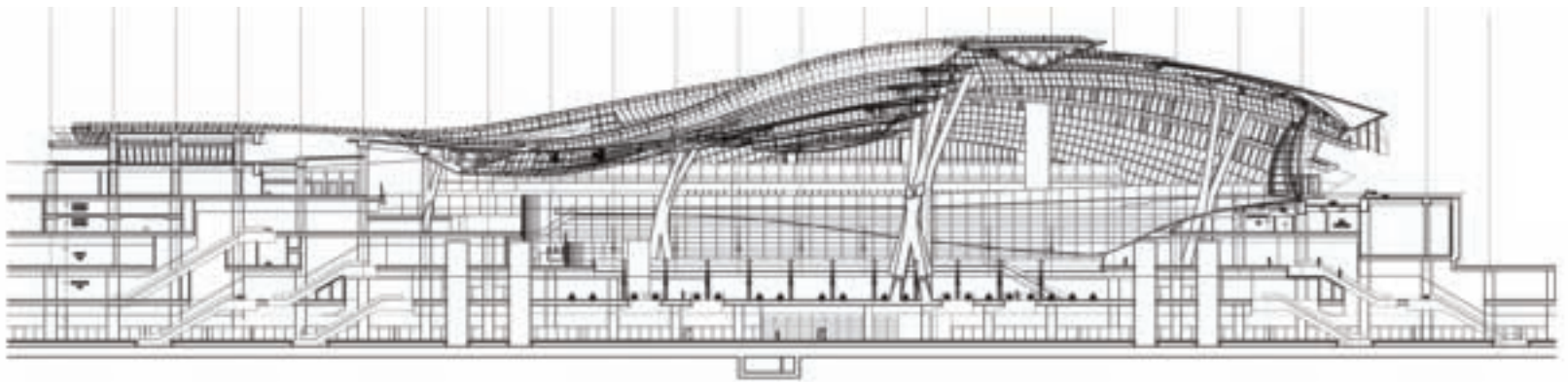
As the "gateway" to Hong Kong, it was considered vital to connect the station with the surrounding urban context and make one aware of the city's character whether arriving or departing. In order to do this, the design efficiently compacted all of the supporting space to allow for a large void down into the departure hall below, with added apertures going down to the track platforms. The outside ground plane bends down to the hall and the roof structure above gestures toward the harbor. The result is a 45 meter high volume which focuses all attention to the south façade with views of the Hong Kong Central skyline, Victoria Peak and beyond.

The terminus station has both regional commuter trains and long-haul high speed trains. The commuter trains go across Hong Kong to Shenzhen, a booming Chinese border city, and further North to Guangzhou, the capital of Canton. Research performed on civil engineering concluded that based on the urban make-up and internal site restrictions, the short haul tracks needed to be placed on the western side of the site, and the long-haul on the eastern side. The locations of these tracks were thus fixed. In addition, research showed that 80% of the station users are short-haul commuters,

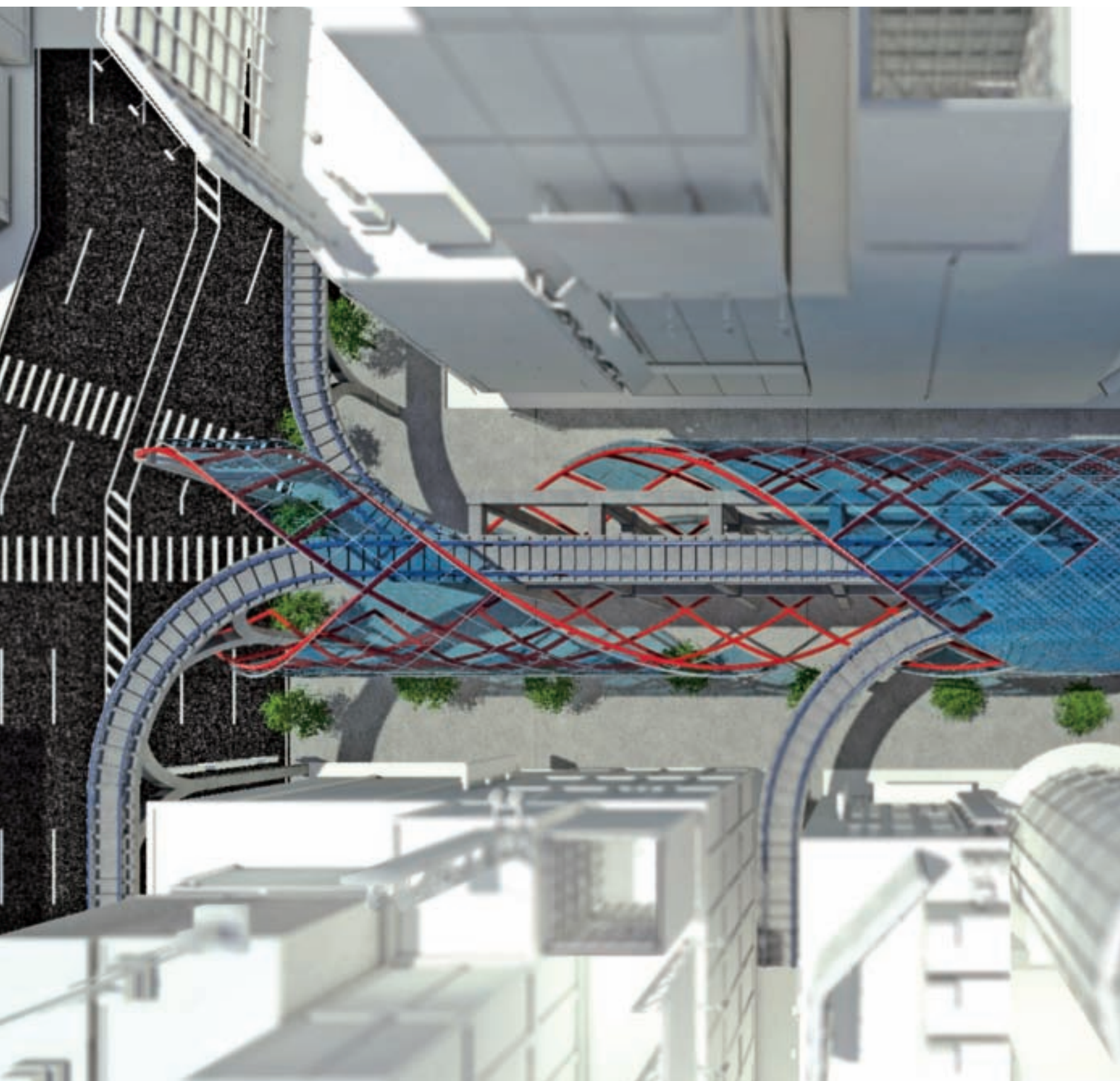
pressuring the design to reduce travel times for these passengers as much as possible. The converging tracks coming into the terminus station becomes a metaphor for Hong Kong's own converging forces. The project maximizes civic gestures both internally and externally. The station is sculpted out of the energy of these moves and strongly defines the design's focus toward Victoria Harbor and the Hong Kong skyline. The West Kowloon Cultural District is invited into the site. A large "Civic Square" opens up toward the cultural district and is defined on the other side with its own outdoor performance amphitheatre.

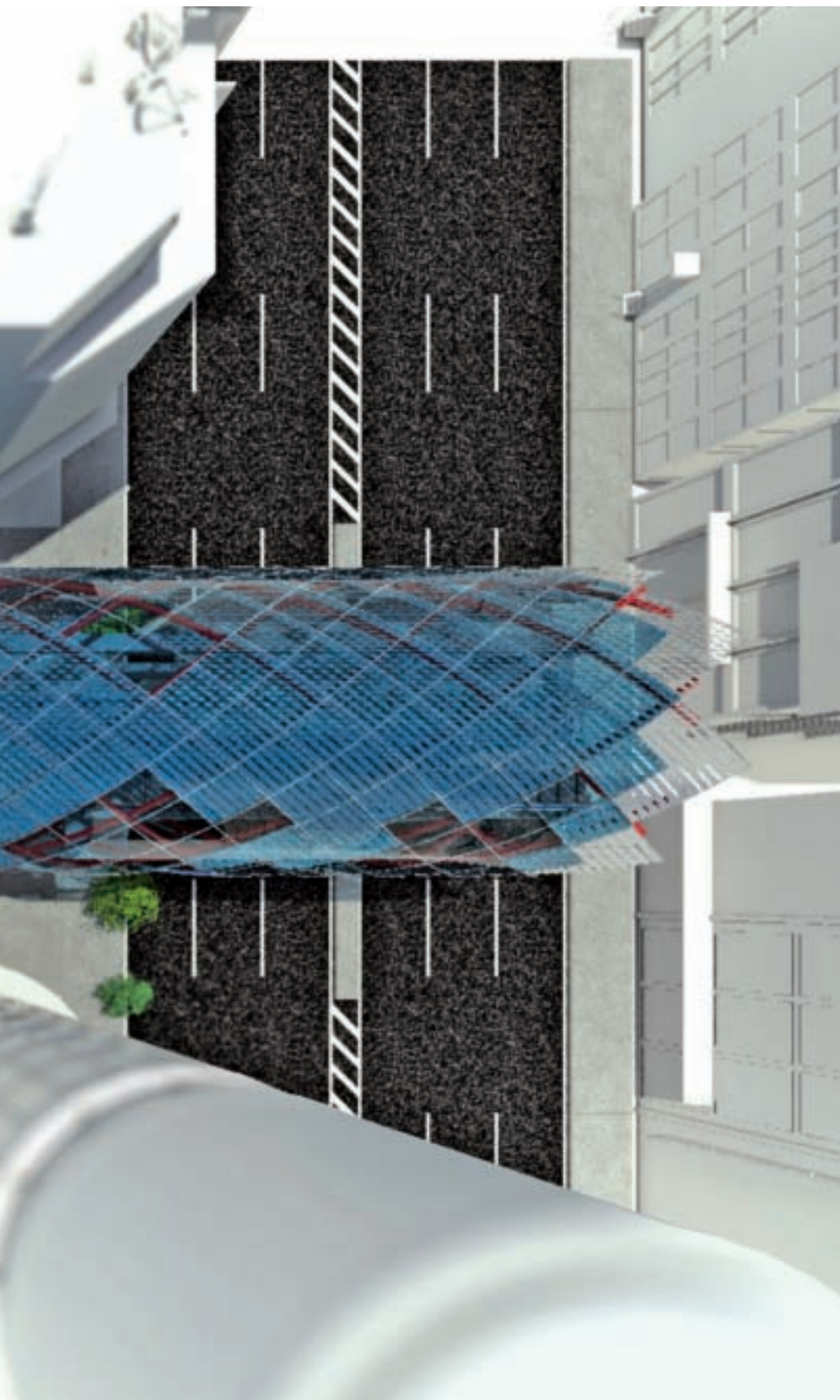
The pedestrian flow into this amphitheatre continues up onto the roof top of the station where there is a highly vegetated sculpture garden, an extension of the green below. The resulting open space is almost five times the area of the already ambitious mandate in the master plan. The green space provides links flowing through the site to a Public Transport Interchange to the North, the Austin MTR Station to the East, the Kowloon Station Development and the Elements shopping mall to the West, as well as internal connections into the WKT itself and its future commercial development on top. This commercial development aspires to be seamlessly knitted into the overall flow of the project even though the success of the development is not dependent on this integration. The station will be situated in the southeast corner of the site. The Civic Square will be defined by the station entrances and facilities on the east and west sides as well as adjacent paths moving up to the top of the station, into the green "roofscape".

The culmination of these ideas is an observation deck on top of the entrance building's crest, twenty five meters above the Civic Square and forty five meters above the Departure Hall below. At the top, the perfect view acts as an extension of the journey into Hong Kong - into and beyond the West Kowloon Cultural District; Victoria Harbor and the concrete jungle of Hong Kong. The station may be visible below as a reminder of where one came from but the future paths of discovery present themselves invitingly beyond...



螺旋火车站 GTL Design
Spiral Train Station

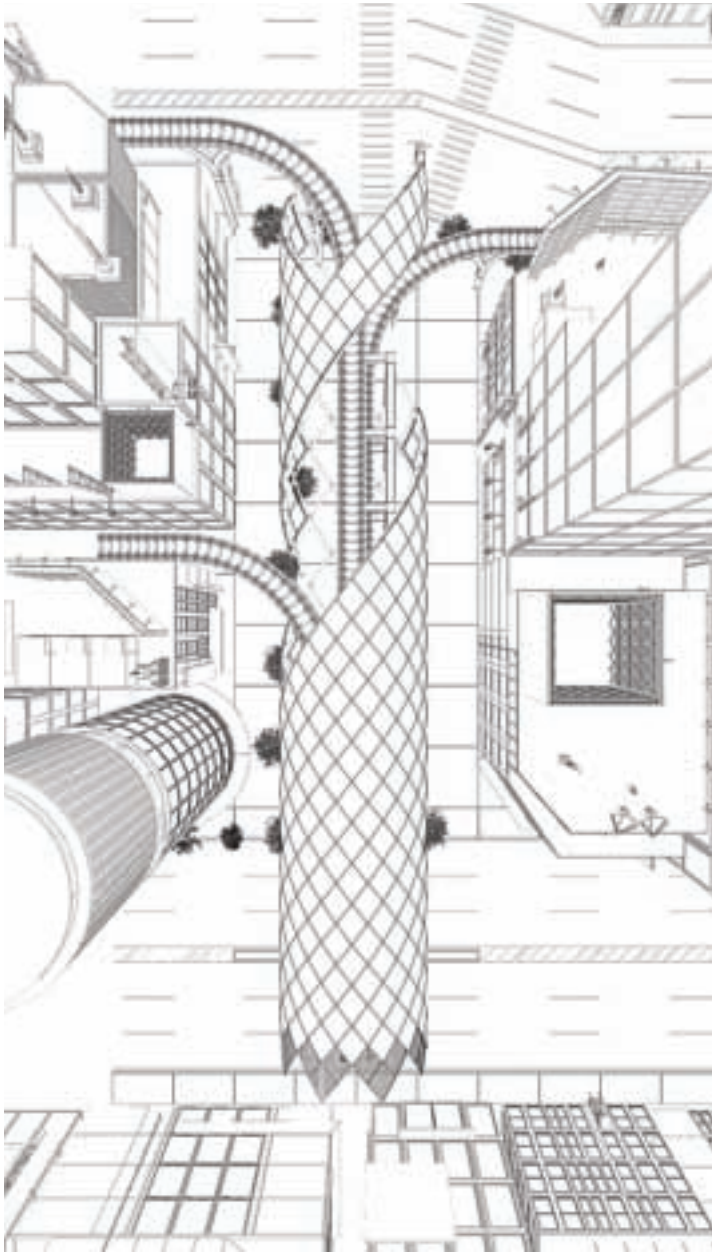




Credits:

Rendering: Gordon LaPlante

Texts: Gordon LaPlante



建筑者使用特殊的积木式模块来对该项目进行设计，十分简约，没有什么额外的楼房建筑，然而要实现这个最初的建筑理念却需要在建筑过程中精雕细琢。最终设计出的车站十分简约，但却能烘托和映衬其他具有特色的楼房地标建筑。车站历经了机械改造和规划修缮，也许已经可以迎合城市大环境以及本身的建筑结构。建筑模块在建造场地外预先构造完成，极具耐用性，使建筑过程更便利更迅捷。设计方需要在每一个有限的空间内搭建每一个元件，这样的建筑模块倒也十分适合这种人口密集的城市环境。因为中心城市发展迅速，拥挤的工作环境正越发成为令人头疼的难题，小型的模块化方案提供了解决该问题的一个有效的途径。独立的建筑过程使未来的扩建和不可避免的修复变得十分容易。

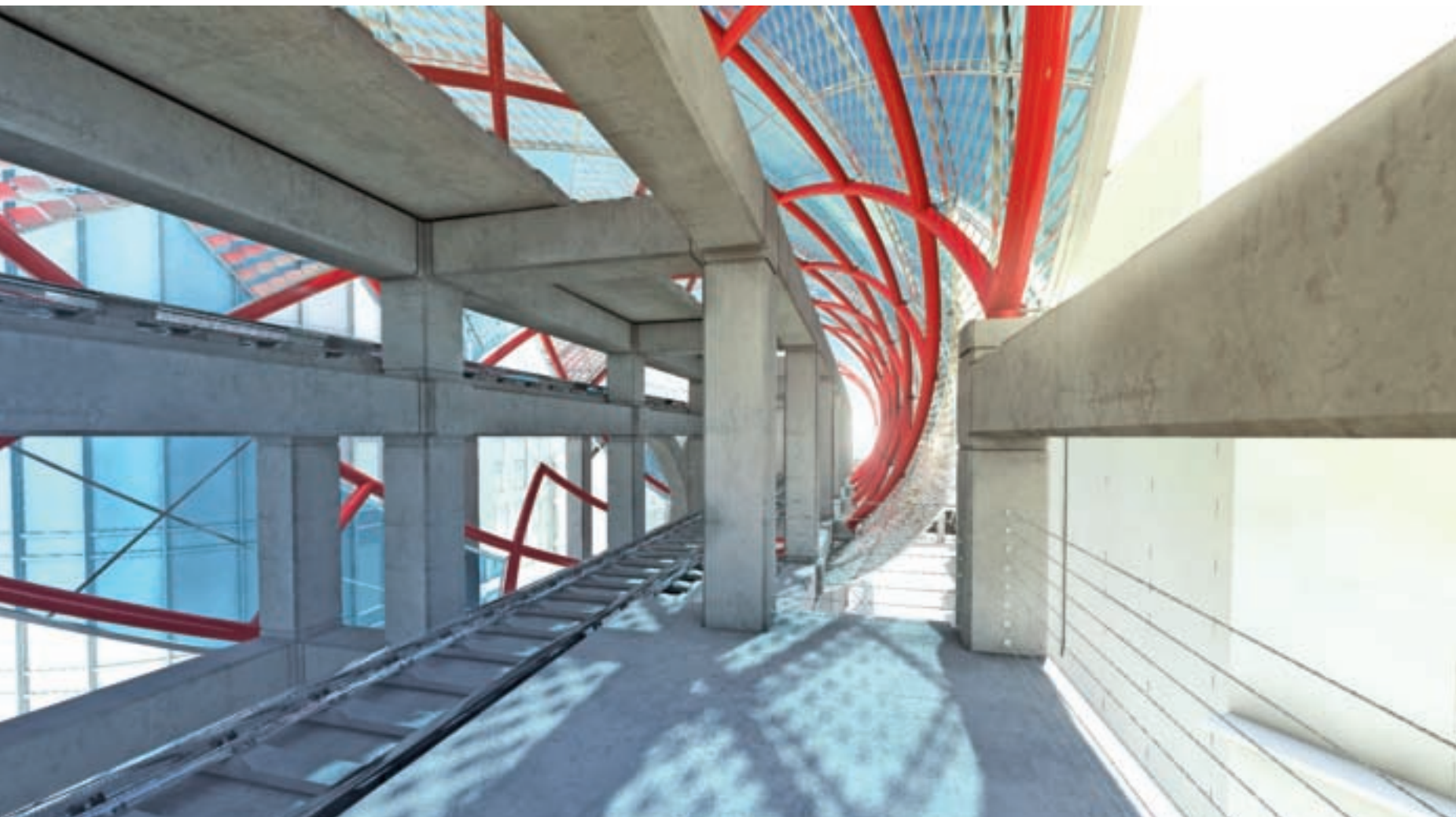
秋叶原电气街位于日本东京，距离东京火车站仅5分钟的火车车程。因为那里的模块设计遇到的限制极多，所以设计方将这里定为建筑的“试验田”。秋叶原是电子游戏、动漫游戏以及电脑游戏的主要购物区。技术玩客和电子产品爱好者纷至沓来，穿行于这里的小径窄巷搜寻这里数不胜数的潜藏货摊。而今日这里的动漫玩家则专门来到各种各样的电子游戏和动漫书店寻找时新商品，然而时不时还能找到特别的电子器械。这些拥挤的街道和喧闹的环境正是为这特别的建筑设计准备的完美试验场。

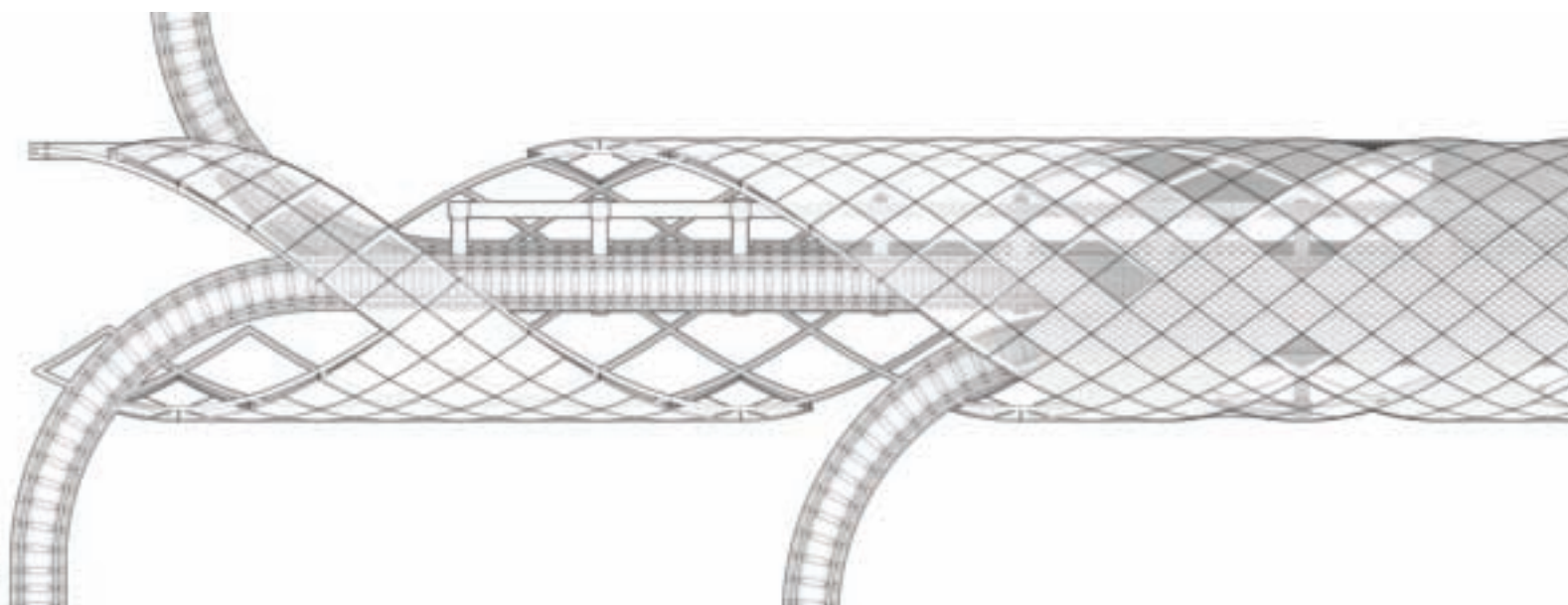
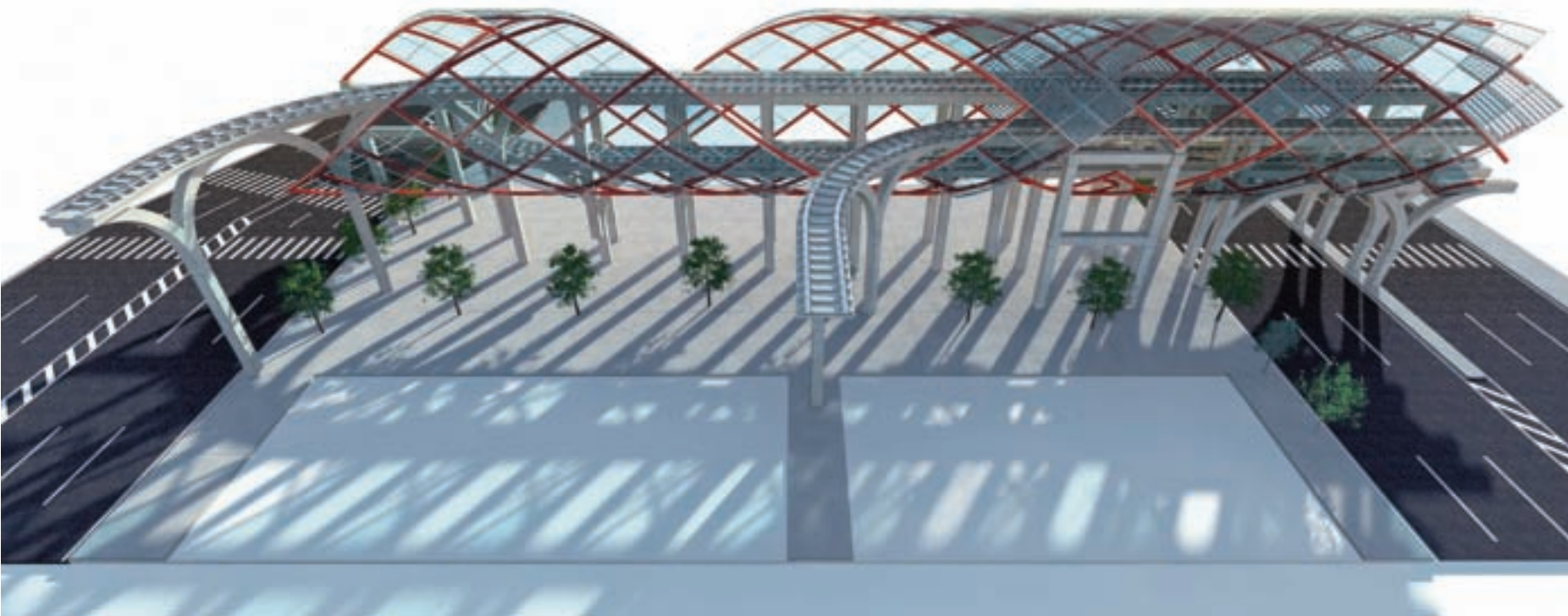
因为秋叶原和许多中心城区道路拥挤，活动繁多，因此最理想的一个方案便是将构造完备的交通平台抬至空中，这样有利于减轻其对公共城区的影响。3条火车轨道同时经过车站使站点成为了拥有双向交通的枢纽。这座车站将承担繁忙的往来客流，为周边人满为患的站点分担压力。许多拥有高处铁轨系统的城区在建筑方面都有限制，当设计者在这些地区开始进行建筑设计时，需要克服重重阻力和难关。

在设计开始之前，建筑师已经明确了对场地的限制。建筑模块需要能够应对不断变换的光线和天气条件，同时可以拥有很多形状并易于安装。每个模块有三层。最外层是由铝制金刚石材料做成的框架，里面包裹着一块曲线状的玻璃，该层面十分坚硬且光滑，可保证与对面的模块相契合。每四个模块构成一个建筑单元，而模块的连接处则正好位于边角处。位于玻璃层下方的便是一处简易的光线控制层，形状构成与前面无异。该层外也装配着铝制金刚石材料做成的框架，里面则装满了旋转的铝制散热片。每一块遮阳散热片都由光感器和电机所控制，能够极好地对落成车站的每个区域进行自动光照控制。最里面的一层是支撑整座车站架构的用钢铁做成的框架。这个不锈钢框架突出了建筑中的钢筋骨架，它将玻璃层和太阳隔热层牢牢地黏合在了一起，架子是用可弯曲的钢管做成的，既可以进行焊接，也可以用螺钉栓合。对于钢架的使用将决定车站外表的设计，继而使最终的项目更具视觉效果。一座混凝土的结构从地面上建造起来，从而支持了上部分的不锈钢框架。这个简易的混凝土柱状结构形成的网络，可以通过场外预制的不同单元被建造成很多形状。它支撑着主玻璃层，火车站台和整座铁轨。火车站台可以根据需要通过调整混凝土结构加大或缩小。设计方在未来可以通过扩充新的建筑元素，扩充外表架构来对车站进行扩建。

建筑外层围绕着每一个模块进行建造。它以一座露天建筑的形式而存在着，具有保护车站不受光照和疾风干扰的作用，从而减少了对空调的依赖。这个单独的建筑单元可以在许多不同的建筑场合进行使用，形成许多种外观形象。在如今的设计中，每一处建筑模块和单元结构将互相环绕和连接，形成圆柱形的车站楼宇，围绕着位于高处的铁轨线。设计方会根据之后火车车厢的设计来对这模型化的外观比例进行调整。设计方去除了车站的侧板，使得火车的车身可以偏离水平轴。而按照计划，每个建筑模块都是为辅助各层次的金刚石架构定形而设置，当螺旋架构建造完工，便可拆除一处模块。来往出入于车站的人见到最多的莫过于那里的金刚石了。

设计者在设计过程中对于金属、玻璃和混凝土的使用恰恰捕捉和烘托出了这座城市车站熙熙攘攘的情形和激情的脉搏。透过玻璃和不锈钢的车棚，若隐若现的阳光照在了游客的脸上，展现出一派别样的风情。当火车进入车站，四周环状的外观瞬间将火车“吞入口中”，使车上的游客获得只有在城市中心才能体验到的愉悦和刺激。





This project was created to experiment with a particular building module and it was treated as purely conceptual without a definite site, however specific site constraints and traits were used while forming the initial concept. The final design is simplistic, yet it has the ability to adapt and respond to unique site traits. Through mechanical transformation and a predefined arrangement, it is possible to conform to fit many urban situations and design layouts. The module can be prefabricated off-site and enough tolerance has been included to allow for easy and quick construction. Each independent component could be installed in a relatively constrained space and this module is ideally suited for a dense urban environment. Given the rapid growth of urban centers, tight working conditions are becoming increasingly problematic and small modular architecture provides one viable solution. The independent construction also allows for easy future expansion and inevitable repairs.

Akihabara Electric Town, located in Tokyo, Japan, is a 5 minute train ride away from Tokyo Station and it has been selected as the test site due to its limitations which represent those the module was designed to encounter. Akihabara is a major shopping area for electronics, anime, and computer games. Tech geeks along with underground electronic enthusiasts flocked to the area to pour through the small alleyways picking through the endless tucked away booths. Today many anime enthusiasts wade through the various video game and comic stores looking for the newest releases but small and special electronic components can still be found. These tight streets and lively surroundings provided the perfect setting to test the particular design.

Due to the congestion and activity in Akihabara and many urban centers, it was ideal to elevate the proposed transportation platform and reduce any impact on public space below. 3 train lines pass through the station allowing bi-directional traffic

in conjunction with a station platform. This station would serve the busy commuter requirements and help alleviate any nearby overwhelmed stations. Many urban areas with raised railways contain restrictive construction challenges and several limitations must be overcome when designing a project for these areas.

Prior to the start of the design, several characteristics were targeted and designated as the most important site constraints. The module had to have the ability to respond to changing light and weather conditions through the use of simple means and this module had to allow for many configurations and easy construction. Each module is composed of 3 layers. The outermost layer has an aluminum diamond shaped support frame on which sits a curved glass skin. This frame provides a rigid border for the glazing while allowing for attachment to an adjacent module. A collection of 4 modules defines a unit and it is at the corners of these units where all the layers are joined. Below the glass skin is a simple sun control layer, the same shape as above. This layer is composed of another rigid diamond shaped frame filled with rotating aluminum fins. Each of the sun shade fin modules are controlled by light sensors and motors allowing for fine-tuned automatic shading control in each area of the final space. The inner most layer is composed of an elegant structural steel framework which supports the entire envelope. The steel frame has protruding steel studs at each spiral intersection used to tie together the glass and sun control layers. It is composed of simple bent steel tubes which could be welded together or bolted on site. The arrangement of steel drives the skin design and provides a strong visual element to the final project. To support the steel framework, a concrete sub structure extends up from the ground. This simple network of concrete columns, beams, joints and planks can be constructed in many configurations using special off-site mass produced concrete units. It also provides the main support for the glass skin as well as the train platforms and tracks.