Title: **Saudi Arabia, Jeddah City and Jeddah Tower**

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Subjects: Architectural/Design
Building Case Study
Structural Engineering

Keywords: Design Process
Master Planning
Megatall
Mixed-Use
Structural Engineering
Wind Loads

Publication Date: 2016

Original Publication: Cities to Megacities: Shaping Dense Vertical Urbanism

Paper Type:
1. Book chapter/Part chapter
2. Journal paper
3. **Conference proceeding**
4. Unpublished conference paper
5. Magazine article
6. Unpublished

Saudi Arabia, Jeddah City and Jeddah Tower
沙特阿拉伯、吉达市和吉达塔

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Mounib is the CEO of JEC, having joined the company in 2013. He was executive board member and board member for numerous businesses. Holder of a Master's degree in business administration from the American University of Beirut, Mounib has over 30 years' experience in city making, land development, real estate development, retail and tourism projects development, strategic planning, corporate finance and financial architecture, and sales and marketing of real estate projects, in the Middle East, North Africa and Europe.

Mounib于2013年加入吉达经济公司，现任公司总裁，并曾担任众多商家的执行董事会成员和董事会成员，贝鲁特美国大学工商管理硕士。Mounib在中东、北非以及欧洲地区的城市规划、土地开发、房地产开发、零售和旅游项目开发、战略规划、企业金融、金融体系、房地产项目销售和市场方面具有30多年的管理经验。

Abstract | 摘要

The Kingdom of Saudi Arabia has embarked on an ambitious project to construct the world's tallest building, Jeddah Tower. Surrounding the kilometer-plus building will be a new city built out of the desert on the outskirts of Jeddah, stretching to an area of approximately 5.3 million square meters. Together, Jeddah Tower and Jeddah Economic City are designed to become a new global destination for Saudi Arabia, introducing new forms of engagement with the country through a changing economic model. Previously reliant on oil, the Kingdom is developing Jeddah as a means of reorienting their economy towards a global model based on business and tourism. The instantly iconic Jeddah Tower will be the new anchor of this changing economic model, attracting investment to the region through its status as a symbol and icon for the country as a whole. The surrounding Jeddah Economic City will not only benefit from that investment, but also reorient design in the region towards a more sustainable and vernacular architecture.

Keywords: Economics, Design Process, Urban Design, Urban Planning, Structural Engineering, Development

沙特阿拉伯王国已投入建设世界最高的雄伟建筑——吉达塔。一座约530万平方米的新城区也将围绕这座1千米多高的建筑而兴建在吉达市郊的沙漠之上。吉达塔与吉达经济城已被同时设计成为全球在沙特的一个新的目的地，并引入了不断变化的新的经济模式，通过这种新的形式融入全世界。之前，沙特主要依赖石油收入，而现在正在开发吉达，并以此作为经济重心向基于商业和旅游业的全球化模式进行转变的一种手段。即将成为标志性建筑的吉达塔将会是沙特不断变化的经济模式下的新焦点，并以其象征与标志性姿态使国家作为一个整体来吸引外界对该区域的投资。吉达经济城周边不仅会从投资中受益，而且还会将该区域的设计向更可持续和本土化的建筑方向发展。

关键词：经济，设计过程，城市设计，城市规划，结构工程，开发

Introduction

In the last few decades, Middle Eastern cities have witnessed an unprecedented boom in real estate development and skyscraper construction. This rapid development can partially be attributed to an influx of capital into the region from vast oil reserves. However, though fossil fuels certainly spurred initial economic growth in the region, it is the desire to diversify from oil that has driven recent trends. Apprehension over the long-term viability of oil has challenged stakeholders in the region to attract new economic sectors with an emphasis on global placemaking and international tourism.

Skyscraper construction has played a crucial role in this. Building tall, iconic structures has become a mechanism for generating value and identity within growing Middle Eastern cities, and has become the preferred method for boosting recognition and creating global destinations for these emerging municipalities. Additionally, high-density construction has become somewhat of a necessity in the warm

项目简介：

在过去的几十年，中东城市已经见证了房地产开发与摩天大楼建设的空前繁荣。 快速的发展可以部分归功于资本从大量的石油储备区域向本区域的流入。然而，尽管石化燃料在一定程度上促进了该地区初期经济的发展， 但仍渴望驱动近代经济趋势的以石油为主导的经济体系实现多元化。

对石油行业长期生存能力的担忧使区域内的利益相关者受到挑战，从而吸引了新的聚焦全球场所营造和国际旅游业的经济成分。

摩天大楼的建设已经在这方面扮演了至关重要的角色。建设高层建筑和标志建筑已经成为在快速发展的中东城市创生价值与认同的一种途径， 并已成为为这些新兴城市助推认知和创建全球目的地的首选方法。此外，高密度的建设已经成为中东热带沙漠气候避免无计划扩张的几分必然，进一步讲，可以在提升可持续性的同时减少能源和效率损失。

Figure 1. Jeddah City (Source: Batley)
图1. 吉达塔鸟瞰图展示吉达城初始规划（来源：Batley）

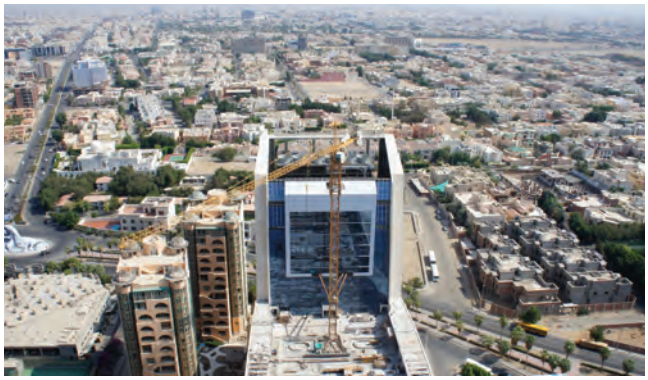

Figure 2. Jeddah City (Source: Batley)
图2. 吉达塔鸟瞰图展示吉达城初始规划（来源：Batley）

desert climate of the Middle East in order to avoid sprawl, and by extension, reduce energy and efficiency losses while improving sustainability.

This dual mentality of placemaking and sprawl-reduction has greatly influenced the design and implementation of Jeddah Tower, poised to become the tallest building in the world and the first kilometer-plus-high structure. The 1,000-plus-meter skyscraper will anchor the planned Jeddah City development, located north of Jeddah – Saudi Arabia's main port and second city – in the "North Obhur" area.

As the city expands beyond its historic boundaries, opportunities arise for as much as 20 million square feet (1.85 million square meters) of new residential and commercial development. Jeddah Tower will be the catalyst for this new development.

When complete, the multi-phase Jeddah City will offer a mixed-use environment with an advanced quality of life, state-of-the-art infrastructure, and modern street furnishings and finishings, using cutting-edge technologies and offering generous public open spaces (Figure 1 and 2).

It will become the new northern pole of the City of Jeddah and will anchor and focus the growth of the city along the coast. It will be a vibrant destination for business, residences of different types, tourism, leisure, entertainment, retail, schooling, medical centers, and government offices and services. In short, developer Jeddah Economic Company (JEC) has a goal of master planning in the fullest sense an unprecedentedly vibrant urban center that will establish Jeddah as a functional equal on the international scene of great modern urbanization, alongside the best new cities of the region and the world.

Jeddah City

Context

Jeddah is the ancient trading city and entrepôt for the Hejaz, and the gateway to the holy cities Mecca and Medina. The ancient Bride of the Red Sea has become a vast bustling metropolis, extending over fifty kilometers along the coast. It has become a city of boulevards and freeways. It has a population approaching four million individuals, and is the second city of Saudi Arabia; the Kingdom's center for tourism, recreation, banking, trade, and business second only to the capital Riyadh. Jeddah has been growing in recent years at an estimated five percent per year .

The direction of its growth is northwards, vaulting many kilometers beyond the calm and clean waters of Obhur Creek, the venue for city-dwellers' weekend recreation lined with its marinas, resorts, and beaches. The old psychological barrier of the Obhur Creek – thought of as remote, as defining the city's edge – has long since been forgotten. The government is investing heavily in the infrastructure of the area as the private sector simultaneously constructs new villa developments stretching northwards along the coast, and infilling inland. Three modes of public transportation are under study – the Regional Rail, the Metro, and a Tram alignment – and all three converge on a site in North Obhur. That site is the location of the master planned 5.3-million-square-meter Jeddah Economic City, with Jeddah Tower as its anchor.

Jeddah Economic City is a phased endeavor. The first phase comprises 1.55 million square meters of land between the tower and the sea, which will emerge over half a decade following the completion of the tower. It will indisputably become the focus of the North Obhur district, a catchment area that extends over an area of about twelve kilometers north–south and 10 kilometers east–west. Jeddah Economic City will inform and vitalize the entire northern edge of the city.

吉达塔势必成为全球最高及首个高度超过一公里的建筑——这种场所营造和减少扩张的双重心态已经极大地影响了吉达塔的设计和方案的实施。吉达位于North Obhur区域，是沙特阿拉伯主要的港口和第二大城市，吉达塔就位于吉达北部，这座一千余米的摩天大楼将会锚定吉达城的规划发展。

随着城市向历史边界以外扩张，2,000万平方英尺（185万平方米）的新住宅与商业发展机会也随之出现。吉达塔将是这一新发展的催化剂(。

吉达塔建成后，分期开发的吉达城将会提供超前的生活方式、 顶尖的基础设施、现代化的街道陈设与装饰、应用前沿的技术以及提供高雅的开放空间等多功能设计(图1和2）。

吉达塔将成为吉达这座城市的新的北部标杆并将确定并聚焦城市沿岸的发展。它也将成为商业、不同类型的住宅、旅游业、休闲、娱乐、零售、教育、医疗中心和政府办公与服务的富有活力的目的地。总之，开发商吉达经济公司（JEC） 的总体开发目标是在全球和该区域最好的新城市周边建设完全意义上的空前繁荣的城市中心，使吉达建设成为功能等同于超现代城市的国际化场所。

吉达城

背景

吉达是古代的贸易城市和汉志的货栈， 通往圣城麦加和麦地那市的大门。古代的红海大桥已经成为一座巨大的繁忙都市，沿海岸延伸50余公里。它已经成为一座拥有林荫大道和高速公路的城市。并拥有近4百万人口，是沙特的第二大城市，也是仅次于首都利雅得的旅游、娱乐、银行、贸易和商业中心。吉达近年正以每年以5%的速度快速发展着。

吉达跨越Obhur Creek平静而干净的水域并延伸数公里向北发展。城市居民周末休

Figure 3 Jeddah City (Source: Jeddah Economic Company)
图3. 吉达塔鸟瞰图展示吉达城初始规划（来源： Jeddah Economic Company）

The site has a six-kilometer-long frontage to the Obhur North Corniche Road, along its long sweep around both the Creek and the Red Sea. It enjoys the clear, clean, airy atmosphere created by the gently prevailing northwesterly winds off the sea. It has long-distance views to the city of Jeddah to the south, and the open expanse of the Red Sea to the west.

Main road access to the site will be swift and direct from the city, via the Obhur Bridge and a proposed highway that will border the site along its eastern edge. Access to the airport, barely ten kilometers away, will be smooth by road and metro. Its proximity to the airport underscores Jeddah City's role as an internationally-oriented place-maker.

Development

After a four-way international competition, JEC selected Peter Calthorpe Associates of Berkeley California to provide a conceptual master plan of the development. Peter Calthorpe is a guru of sustainability and an eminent figure of the US west-coast New Urbanism movement. He advocates sustainable urban villages and a reduction in car-use. His appointment was a bold move, in this, the most car-dependent and energy profligate of cultures. Accordingly, he produced a vision of an urban landscape for the 5.3 million square meters of land that surrounds the tower containing a mix of uses within a system of landscaped canals and lakes.

JEC then undertook a rationalization of the first phase of this plan, for a land area of 1.5 million square meters, under the guidance of their consultant, urban designer and planner Ian Hogan, in cooperation with Dubai architects GAJ, who had been runners-up in the competition won by Calthorpe Associates.

Hogan and GAJ both have great experience with the climatic exigencies and the culture of the region, and have brought forward proposals which retain the spirit and aspiration of the Calthorpe Associates' plan, calibrated to the commercial realities of this location in time and space.

JEC's in-house design team and Hogan are now engaged in refining seven sector plans within phase one, each of defined and distinctly different character, and have begun the process of drawing-up plot development guidelines for the approximately 150 plots of land created within them.

The concept of the walkable city has been put in motion and phase one now has commercial objectives. An international class super-regional shopping, leisure, and entertainment offering will be put in place. It will be linked by breathtaking and unique animated public open spaces that surround Jeddah Tower and lay the foundation for the walkable city concept (Figure 3). There will be a full provision of social and community facilities as appropriate for city center life lived at the highest level of urban amenity.

Jeddah Tower

Supertall and Megatall towers, when done correctly, are the catalyst for the city or district around them. They give the area an identity. They increase the local economy and connect that local community to the global one. If done right, a tower of this manner will put a city on the map for tourism, increased business ventures, and increased future development.

闲场地主要集中在游船码头、度假村和海滩。Obhur Creek以往的心结是被看作偏远之地，随着城市边缘的重新界定，这一看法已被遗忘很久了。政府正投入巨资建设本地区的基础设施，同时，私有企业也在沿着海岸向北开发建设新的别墅项目。公共交通的三种模式也正在研究之中——区域铁路、地铁、有轨电车——所有这三项均交汇在North Obhur的某处。这里就是530万平方米的吉达经济城所在地，吉达塔将作为其锚点。

吉达经济城将分期开发，一期包括塔楼与海之间155万平方米的土地，塔楼将用五年多的时间建成。她也将毫无争议地成为North Obhur地区的焦点。向南北延伸超过12公里， 向东西延伸超过10公里。吉达经济城将会焕发整个城市北部边界的活力。

吉达城在Obhur North Corniche前有一处6公里长的开阔地带，沿着Creek和红海周边延伸。这里沐浴在西北方吹来的清新、干净、流通的空气中。 向南拥有吉达长长的城市景观带，向西可见红海开放广阔的区域。

出入吉达塔的主干道路快速而直接与城市贯通，可通过Obhur桥和拟建的高速路沿着东部边界接近场地。塔楼距机场仅10公里，公路和地铁畅通无阻。临近机场的优势彰显了吉达城的国际化的场所营造角色。

开发

在广泛参与的国际竞赛后，吉达城经济公司选择了加利福尼亚伯克利彼得.卡尔索普事务所 Calthorpe 提供概念设计总体开发方案，彼得.卡尔索普是一位可持续发展的倡导者和美国西海岸新城市主义运动的杰出人物。他主张可持续的城中村和减少汽车的使用。从绝大多数依靠汽车和挥霍能源的文化角度讲，他的任命是一个大胆的举动。于是，他在530万平方米的土地上创作了城市景观愿景，围绕塔楼的运河景观和湖泊体系设计了多功能开发方案 。

JEC 之后开始考虑一期方案的合理化，150万平方公里的土地面积，在顾问和城市设计师与规划师Ian Hogan的指导下，与迪拜建筑师GAJ合作，GAL曾获得了Calthorpe Associates设计竞赛的亚军，Hogan and GAJ均在气候应对和区域文化方面拥有极其成功的经验，并提出保持Calthorpe Associates精神和愿望的方案，在时间和空间上使这一地区的商业现状达到标准化。

JEC 的室内设计团队与Hogan正忙于改善一期的七个分段开发方案，其中每一分段都具有明显不同的特征，并已开始为此范围内的近150个地块拟订开发指南。

This is exactly what Jeddah Tower is intended to do.

Tower Concept

Recognizing the benefits of building such an iconic structure, JEC set out with the goal of building not just the tallest building in the country, but the tallest in the world. In order to meet their objectives, they invited several architecture firms to participate in a design competition that resulted in the eventual Jeddah Tower design. The competition brief asked teams to design a multi-use tower serving a five-star hotel, luxurious serviced apartments, state-of-the-art offices, and residential units.

The winning design, by Adrian Smith + Gordon Gill Architecture (AS+GG), would take the tower to the highest position of CTBUH's three height categories (including the all-important architectural height), firmly positioning it as the future world's tallest building. However, another criterion of the winning scheme was the tower's "constructability potential and efficiency." In that regard, Adrian Smith – who previously designed the Burj Khalifa while at Skidmore, Owings & Merrill – sought to improve upon that design.

Both towers exhibit a tapering "y-shaped" design in which every element participates in both gravity and lateral support (FIgure 4). If one considers the shape as being similar to a wide flange beam with its mass of structural material at the end of each wing (the "flanges") where it is most optimally placed, connected by shear walls (the "webs") forming the corridor walls and core, the structural efficiency is maximized by placing the material where it will do the most good in resisting wind-induced bending loads. The triangular core thus formed by the shear walls is also an optimized shape, very good at resisting wind induced torsion.

Early on, it was also decided that the tower could not just be vertically extruded. Had that approach been pursued, wind vortices would have become organized on the sides of the tower and amplified the effect, inducing accelerations of lateral movement well above advisable levels as these amplified vortices approach the resonant frequency of the tower. To counter this natural magnification, one very typical approach is to reduce the plan size of the tower as it rises in height. On Burj Khalifa, the tower has 27 tiers with setbacks/plan shape reductions at each. Similar to Burj Khalifa, Jeddah Tower "confuses the wind" by reducing the cross-sectional size of the tower as it rises. However, Jeddah Tower does it by means of a continuous taper to each wing. This was a result of one of the primary lessons learned in the construction of Burj Khalifa. Eliminating the

可步行城市的理念已经开始启动， 一期现已有商业目标，一个国际级别的超级区域购物、休闲和娱乐设施将落实到位。这些都将与环绕吉达塔的令人惊叹的、独特的活力公共开放空间相链接，从而为可步行的城市理念奠定基础（图3）。结合城市中心高级别的城市便利设施需求提供完备的社区设施供应 。

吉达塔

超高层和巨高层塔楼建设成功后将成为所在城市和周边区域的催化剂，他们赋予该区域认同感。他们提振了当地的经济，并将本地社区与全球社区联系起来。如果实施恰当的化，这种方式的塔楼将会使城市成为旅游目的地，增加创业并提升未来的发展，这些也正是吉达塔准备做的事情。

吉达塔的理念

认识到建设一座标志性建筑的利益所在，JEC 设定的目标不仅仅是要建设全国最高同时也是全球最高的建筑。为了实现他们的目标，他们邀请了几家建筑设计公司参与吉达塔最终设计方案的设计竞赛。竞赛主要是让团队设计一座涵盖五星级酒店、奢华的服务式公寓、先进的办公楼与住宅单元的多功能塔楼。

AS+GG建筑公司在设计竞赛中获胜，这一设计将使吉达塔拥有 CTBUH 三个建筑高度类别的最高值（包括非常重要的建筑高度在内），从而 将其牢牢定位为未来全球最高的建筑。然而，胜出方案的另外一个标准是塔楼的“可施工性潜能与效率”，在这一方面，之前哈利法塔的设计师SOM事务所的艾德里安史密斯试图改善这一设计。

这两座塔楼均呈现出锥状的倒Y型设计，其中的每一部分在结构上同时起到垂直和水平支撑的作用（图4）。有人认为该形状与宽翼缘梁相似，在每个侧翼的末端附有大量结构构件（相当于“法兰盘”），这里也是最适宜放置这些构件的地方；由剪力墙连接(相当于“肋板”)形成中心廊道，将构件放置在最大承受风荷载的地方将使结构强度达到最大化。由剪力墙形成的三角框架核心也是最优化的形状，这种形状能很好地抵制风致扭转。

早期设计，非常明确塔楼不能只是承受垂直荷载，在风愈发逼近塔楼的时候，塔楼的侧面形成风涡旋并逐渐加强，当增强的

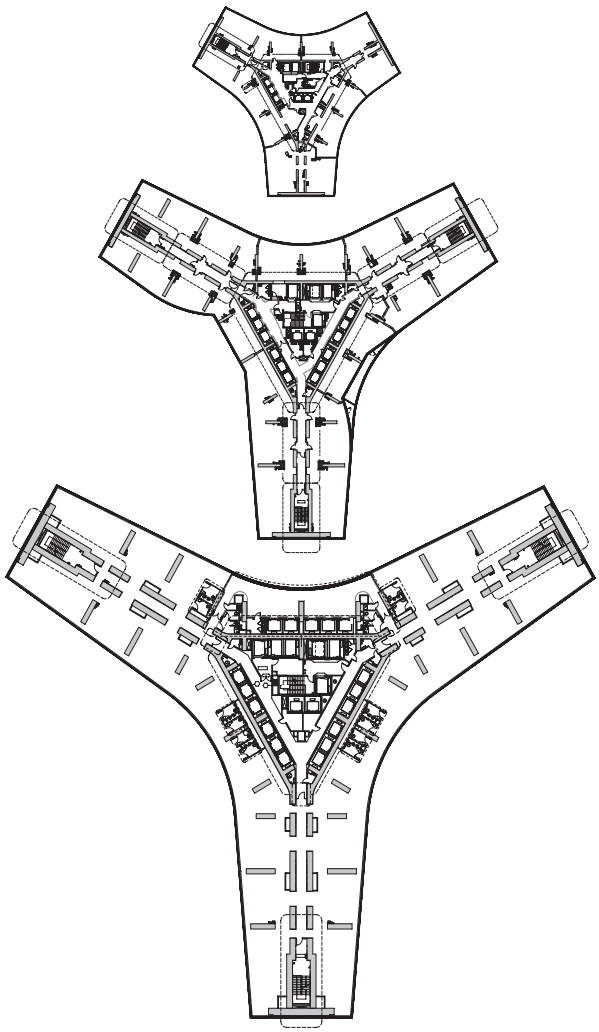

Figure 4. Floor Plans - Office Space, Level 44 (middle), Level 99 (top) (Source: Adrian Smith & Gordon Gill Architecture)
图4 楼层平面图–办公空间，44层（中间），99层（上面）(来源: Adrian Smith & Gordon Gill Architecture)

stepped setbacks as on the Burj obviated the need for outrigger transfers and belt trusses at certain locations, which in turn reduces the concentration of structural loads as well as permits a more efficient, continuous, and uninterrupted construction process.

While this design is engineered for efficiency, it is also rooted in the vernacular architecture of its desert landscape. The sleek, streamlined form of the tower can be interpreted as a reference to the folded fronds of a growing young desert plant. The way the fronds sprout upward from the ground as a single form, then start separating from each other at the top, is an analogy of new growth fused with technology.

As AS+GG Partner Gordon Gill explains: "the tower evokes a bundle of leaves shooting up from the ground – a burst of new life that heralds more growth all around it. This symbolizes the tower as a catalyst for increased development around it." In terms of the project's location, studies of sun, wind, and views, among many others parameters, informed and guided the design process that shaped the tower. The tower orientation in plan was adjusted to point one wing toward Mecca, while another points almost directly north, by which both the overall solar load was reduced while simultaneously improving the views of the majority of residential units (Figure 5). As it turned out, that adjustment in orientation also helped mitigate the magnitude of pedestrian level winds in several of the more critical locations, although it slightly increased the overall load due to design wind conditions.

The inclusion of balconies in this type of building is not very common. However, the tower design includes balconies for a variety of reasons. First, weather conditions in Jeddah are tolerable or even pleasant for a substantial part of the year. At the highest levels of this tower, reduced air temperatures and increased wind speeds make outdoor conditions better than at lower levels. Secondly, at a latitude of 21.5 degrees and with the prevailing sunlight intensity, any horizontal projection will create shadows on the tower surface, reducing direct solar radiation. Finally, from the tower massing point of view, the overlapping pattern of the balconies added a layer of intricacy and visual complexity to this mostly vertical structure. The horizontally overlapping balconies visually tie the tapering wings together and add to the "organic" character of the structure (Figure 6).

Building Components

Another significant design decision early on was to standardize the floor-to-floor height at four meters for all uses, including office,

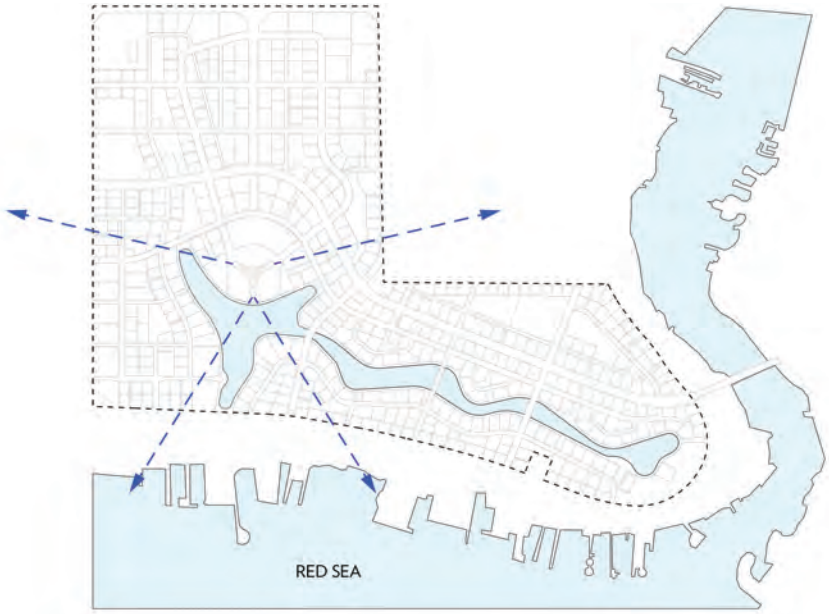

Figure 5. Jeddah Tower Map (Source: Adrian Smith & Gordon Gill Architecture)
图5. 吉达塔示意图（来源：Adrian Smith & Gordon Gill Architecture）

漩涡接近塔楼的谐振频率时，所引起的水平运动加速度远远超过”可控范围”。 为消除风力的自然增强，一种非常典型的做法是 随着塔楼的高度向上攀升而减少其平面尺寸。哈利法塔有27个层级，自下而上逐级收缩。与哈利法塔相似，吉达塔随着高度的不断增加通过减少横截面尺寸来“干扰风力”，但是吉达塔是依靠连续减少横截面尺寸做到的。这是从哈利法塔建设过程中所获取一项主要经验。正如在迪拜塔上避免悬臂梁转移和在一定的位置固定桁架的情况出现一样，消除逐级收缩反过来既可以减少结构集中荷载，又可实现更有效、连续和不间断的施工过程。

设计在考虑效率的同时，也同时立足于带有沙漠景观的本土化建筑考量。塔楼的这种光滑的、流线型设计可以视作一株生长中的幼小沙漠植物的折叠叶状体，叶状体以单体的形式从地面向上萌发，并开始在顶端彼此分开，这个过程可喻作融合科技的新增长。

正如AS+GG 的合伙人戈登解释的那样：塔楼使人联想到一束枝叶从地面萌发——新生命的一次萌发预示着周边更多生长的来临。这象征着塔楼是周围更多开发的催化剂。按照项目的地址、光照的研究、风环境和视野，除了其他参数外，还提供资料和指导塔楼的设计过程。塔楼平面方向已被调整为其中的一个侧翼指向麦加， 其他的侧翼几乎直接指向北面，这样在提高了大多数住宅单元的视野的同时，全部的太阳负荷也被减少（图5）。结果是，尽管由于风环境的设计略微增加总负荷，方向的调整还是可以帮助减少几个关键部位的行人尺度的风力。

在这种类型的建筑中包含露台并不常见。但是，塔楼的设计出于多种原因包含了露台。首先， 吉达的天气状况全年大部分时间是不错的，甚至是宜人的。在塔楼的最高层降低的气温和增加的风速使室外的条件好于低层。其次，在21.5度的范围内和适宜的日照强度下，水平投影会增加塔楼表面的阴影，减少直接的太阳辐射。最后，从塔楼的视野来看，露台的叠饰效果对这个多半为垂直元素的建筑来讲平添了一丝在楼层和视觉上的单一性。这种横向叠加的露台视觉上似与尖细的侧翼系在一起，增加了结构的“有机”性（图6）。

建筑构件

早期另外一个重要的设计决策使层高达到4米以满足所有的功能，包括办公、住宅和酒店。此外，这样将有助于垂直交通的灵活性和塔楼叠建过程中的不同设计阶段的潜在改变。

根据客户协议，办公楼层设置在底部以利用更大的楼层平面和下沉电梯间，并提供抵达豪华四季酒店、四季集团旗下公寓和吉达塔不同规格的豪华住宅。在塔楼顶部设置了一个超级阁楼，这里的承租人可以抵达世界最高楼的塔冠。

客户起初要求建设一座大部分时间由业主或157层的超级阁楼的参观者使用的停机坪。初始设计停机坪放置在这一层，这里也是乘坐直升机进入或离开休息厅的平台。然而，通过进一步与经验丰富的直升机飞行员和风力工程顾问的深入探讨与咨询，他们认为在停机坪处起飞或进行军事演习是相当危险的，所以最后决定这一157层的平台的新用途是“空中露台”/观景台。约500平方米、高630米的露台建成后，将成为世界最高的露台（图7）。

塔楼影响

吉达塔设计过程的意义是探索文化、场地和现时品质，其目的是创造一个对客户的文化和场地，同时也对沙特的历史以及建

Figure 6. Jeddah Tower Balconies (Source: Adrian Smith & Gordon Gill Architecture)
图6. 吉达塔阳台（来源：Adrian Smith & Gordon Gill Architecture）

residential, and hotel. Among other things, this would help vertical transportation flexibility and potential change in tower stacking through the different design stages.

In agreement with the client, office floors are placed at the bottom to take advantage of larger floor plans and dropping elevator bays. These are followed by a luxurious Four Seasons Hotel , Four Seasons-branded apartments, and the tower's deluxe residential units of various levels and sizes. At the very top, a super-penthouse is placed to allow the tenant to be at the crown of the tallest building in the world.

The client originally asked for the inclusion of a helipad to be mostly used by the owner or visitors of the super-penthouse at level 157. The original design placed it at this level, where it would be the platform from which to access or leave the Majelis (lounge) of the penthouse via helicopter. However, further studies and consultation with experienced helicopter pilots and wind engineering consultants suggested that the helipad location would make taking off or landing maneuvers extremely dangerous. But by this point, the design for the helipad was integrated and accepted as part of the overall tower design. It was decided that the feature's new use would be as a "sky terrace"/ observatory deck serving level 157. It will be the highest terrace in the world when completed at an elevation of 630 meters (Figure 7), and will be 500 square meters in area.

Tower Impact

The intent of the Jeddah Tower design process was to channel the cultural, site, and temporal forces in order to create a structure sensitive

筑工程史的关键时刻都具有影响的建筑。设计世界最高的建筑本身就是一项空前的任务。这要求在为每次挑战寻求最佳的解决方案时具有开放的思想，甚至意味着超越以往的经验而接受方法、过程和科技。

在采取这些重大的步骤前，他们已经取得了空前的成功。项目的本质是重新定义他们的本地和区域环境，提供工作和机会，并将成为新城市中心的核心。同样，吉达塔这样的标志性建筑有助于改变和都市化社区环境，并在这种情况下带动郊区的扩张和巩固原有的利益。随着吉达塔的高度向上攀升， 这些利益也将在吉达城周边的开发中得以体现。

总结

吉达经济城将体现投资者和开发商的开发精选定位，体现国际品质的建筑、最高标准的施工建设、创新的城市规划和环境可持续性。它将为吉达市和包括地产在内的许多的行业开辟新的无法预知的视野。

作为全球的场所营造策略，吉达塔连同吉达经济城一道，在建立扎根于本土化的完全独特的认知的同时，带给这座城市更多的关注与经济发展。通过标志性的设计引发全球的关注，此项开发必然有益于当地、居民和院校：标志性塔楼的建设和其周边的综合环境不仅提振了经济的发展，同时也刺激了区域内支持结构的开发，从而使区域内的新需求得以满足。

一座标志性的塔楼可以为一座城市充满希望的未来创生机会。人们搬到城市建设塔楼，人们搬到城市去服务于塔楼，他们居住在塔楼周边的社区，他们创业来支持塔楼。通过吉达塔和吉达经济城的建设，JEC 和它的同行们已经开始在精心打造一个新的吉达，在塑造一份新的、独特的、本地认同感的同时来拥抱全世界。这正在发生…!

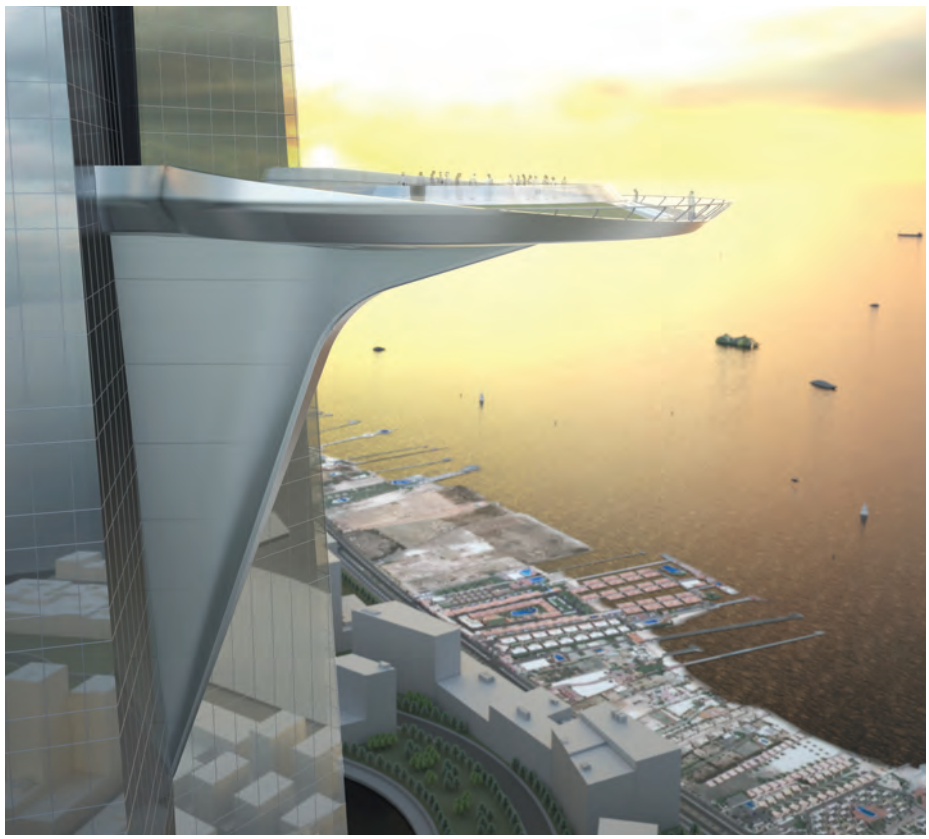

Figure 7. Jeddah Tower Terrace (Source: Adrian Smith & Gordon Gill Architecture)
图7. 吉达塔露台（来源：Adrian Smith & Gordon Gill Architecture）

to the client's culture and location as well as this pivotal moment in the Saudi Arabia's history and the history of architecture and engineering. Designing the world's tallest building is by its very nature an unprecedented task. It requires an open mind in search of the optimal solution for every challenge, even if it means going beyond the proven and accepted methods, processes, or technologies .

These major ambitious steps have been taken before and they have had unprecedented success. Projects of this nature will redefine their local and regional environments, will create jobs and opportunities, and will become the central piece of a new urban center. As such, iconic buildings like Jeddah Tower help to transform and urbanize communities and in doing so contain suburban sprawl and add to densification with their inherent benefits. As Jeddah tower continues to climb, these benefits will be reflected in the surrounding Jeddah City development.

Conclusion

Jeddah Economic City will emerge as investors' and developers' location of choice for development, embodying international quality architecture, the highest standards in construction, innovative urban planning, and environmental sustainability. It will guide the City of Jeddah and numerous sectors, including real estate, towards new and previously unforeseen horizons.

As a global placemaking device, Jeddah Tower, along with Jeddah Economic City, will bring attention and economic development to the city while establishing a wholly-unique identity rooted in the local vernacular. By embracing a global outlook through iconic design, this development will inevitably benefit locals, residents, and institutions: not only does the construction of an iconic tower and its surrounding complex spur economic development, but it also spurs development from within the region with support structures that satisfy the new needs of that region.

An iconic tower can increase a city's chance for a productive future. People move to the city to build the tower, they move to the city to service the tower, they stay in communities that surround the tower, and they create businesses to support the tower. Through the construction of Jeddah Tower and Jeddah Economic City, JEC and its peers have begun the process of fashioning a new Jeddah that embraces a global world while shaping a new, uniquely local identity. It's Happening …!

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