

JEDDAH CONVENTION AND EXHIBITION CENTER

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Abstract

This project is a complex of many different categories of showrooms, exhibitions, meeting and conference halls, theatre, and galleries. The connection of these spaces can create a place that will serve the development of Jeddah community as well as for tourists and business. Also, this project is created to take the convention centers in Saudi Arabia to another level. Several case studies were analysing for the project design development. Several main zones are considered in this project namely, exhibition halls, meeting rooms, conferences rooms, ballroom, auditorium, hotel, amenities, administration, Jeddah chamber of commerce, and services. The location assessment measures such as accessibility, image/visual quality, visibility, site capacity, proximity to support services, proximity to the airport, surrounding land use, and security are used to identify the most appropriate location for the project. The proposed project may satisfying the need of the youth in the kingdom to practice their capabilities and show their knowledge and passion will lead them to the international markets around the world which will increase the economical level of Saudi Arabia.

Keywords -- Convention Center, Exhibition Center, International Markets, Tourists, Business

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INTRODUCTION

The Chamber of Commerce successfully fulfilled the dream of the Mecca government and Prince Khalid Faisal, transforming Jeddah into the largest city for holding forums and conferences throughout the Middle East [1- 3]. In addition to local, regional and international organizations, the Jeddah Chamber of Commerce and Industry (JCCI) has won praise from several government agencies and businessmen [2]. The Chamber of Commerce has always been keen to provide highly advanced and high-quality services, so it is committed to improving service quality and performance efficiency to meet the huge economic growth needs of the Kingdom of Saudi Arabia. JCCI's mission to serve the business community and the private sector was later expanded to support the government as a strategic partner to achieve its social and economic development goals, and to develop infrastructure projects, support investment projects and promote development. Social and charity programs [2].

The business history has been developed in Saudi Arabia since the beginning of the 21st century [4, 5]. With this development the need for a complex that serves these many different businesses has increased. Saudi Arabia and specially Jeddah has different successful and talented business developers who need to show their talent to the world [6]. Jeddah contains only one convention center (Jeddah International Exhibition and Convention Center) which is not very developed or enough for the importance of Jeddah now days. Jeddah is the most important city sidelong the red sea beach of Saudi Arabia, which makes it the target for all tourists and business developers around the world.

CASE STUDIES

There are three similar case studies were chosen from various country due to its outstanding design concept, uniqueness design trend and attractive architecture construction. The selected case studies are sensitively design to fulfil their project objectives and they are:

- a) Qatar National Convention Center QNCC, Doha, Qatar
- b) Boston Convention and Exhibition Center, Boston, USA
- c) New Zealand International Convention Center, Auckland, New Zealand

Qatar National Convention Center QNCC, Doha, Qatar

The architectural design of the QNCC was based on the vision of the Japanese architect Arata Isozaki. The front of the building has a form of a large tree known as the "Sidra Tree" engulfing its trunks around the building and carrying the ceiling (Figure 1). This organic form was not designed to be a Sidra Tree, it was rather a purely mathematical calculation made to support the ceiling in an ideal engineering manner. When the calculations were entered into the computer, it gave this shape that was similar to a Sidra Tree, thus, the concept of the Sidra was adapted without hesitation [7-9].

The Centre consists of three buildings; The Headquarters, The Exhibition Hall and the Parking, which are all given an artistic design inspired by the Qatari heritage. QNCC is an affiliate of Qatar Foundation (QF) for Education, Science and Community Development. The center is one of the most advanced exhibition centers in the world. It is located on QF's 2500-acre campus, and professors from world-renowned universities such as Will Cornell, Texas A& M and Georgetown University. In addition to the local center, it also comprises the Sidra Medical Research Center, Qatar Science and Technology Park and Al Jazeera Children's Channel. The center's fabulous construction and advanced amenities are ideal for hosting local, regional and international conferences and exhibitions. QNCC's design focus is on sustainability, and it was successfully built according to the LEED gold certification standard. It includes a multi-purpose theatre, three levels conference halls, 57 meeting rooms, luxurious lounges and hospitality suites [7, 8].

Boston Convention and Exhibition Center, Boston, USA

Boston convention and exhibition center is designed by Rafael Vinoly, located in the center of the South Boston Waterfront. The convention center signifies the city's entry into the top of the convention facilities market. The volume of BCEC is located in two different urban environments. Although there are large multi-purpose buildings in the area north of the site as part of the reconstruction of Boston's southern waterfront, small residential buildings are characteristic of the south of the area. The building design effectively addresses this shift by following changes in height and a long and soft roof (Figure 2) [10-12].

As the complex further integrated into its surroundings and reduced its visual impact on the surrounding area of South Boston, the huge space of the pavilion was surrounded by smaller meeting rooms and social spaces. Vehicles entering and leaving the convention center are a sensitive issue for local residents. To isolate traffic from the streets south of Boston, the elevated loop surrounds the building and provides independent vehicles to the meeting room and lobby of the 700-meter-long subdivision hall next to the facility. The parking lot and loading and unloading station are located under the highway and are not visible. The V-shaped columns inside the BCEC connected on both sides of the pavilion support the meeting rooms and social spaces on the upper floors. The arch of the roof and its exposed trusses are essentially a very elegant industrial shed. Its free span can exceed 50 meters, and makes the space extremely configurable, suitable for large installations. Two bridges float above the almost unobstructed space to connect the sides of the building and provide more efficient circulation [10, 13].

New Zealand International Convention Center, Auckland, New Zealand

The New Zealand International Convention Centre is led by Warren and Mahoney, with Woods Bagot and Moller Architects creating world-class facilities (Figure 3). The convention center is planned to be a landmark building in Auckland and will host large-scale international conferences, accommodating 2850 delegates [14].

NZICC is designed as a warm and open building, supplemented by new street views for local, national and international tourists to enjoy. The bright building will enjoy beautiful views of Auckland in the heart of the Central Business District. This will be a flexible and dynamic space, closely related to day and night city life. The architects and designers working on the NZICC have ensured the design is firmly anchored in its New Zealand roots, reflecting our rich heritage [15]. In addition to holding meetings, NZICC can also host sports events, such as basketball or boxing, as well as theater and music performances.

The design of the center reflects the characteristics of the country and the people, the common characteristics of an open and vibrant culture and the dramatic connection with the landscape, while using a deep texture and innovative technology [14].

The ridge wall of the Terracotta Army of Qin Shihuang will mark the gallery and the main entrance, and will also define the edges of the public passage. The design of the center includes a 100m gallery space for navigating between events and buildings. The design of the building uses a minimum of internal pillars to prevent obstructing the delegate's view. The ceiling of the exhibition hall will reach 9m high [14]. The walls are designed to be highly flexible and adjustable in height, providing a multifunctional space. The design will include transparent main spaces and floor-to-ceiling glass to allow natural light into the building. The unique glass also allows visitors to visually experience city life, while encouraging people to watch the facility from the outside to explore the city center [14].



Figure 1. Qatar National Convention Center QNCC, Doha, Qatar [9]



Figure 2. Boston Convention and Exhibition Center, Boston, USA [12]



Figure 3. New Zealand International Convention Center, Auckland, New Zealand [14]

SPACE PROGRAM

Based on the case studies, the site area of Qatar National Convention Centre is about 47,501m² and New Zealand International Convention Center is about 32,000 m². The site area of New Zealand International Convention Center is about 32000 m² was for 4000 users. This means that each user occupies 8 m². Therefore, 5000 users need an area of 40,000 m².

The proposed zones of the project are exhibition halls, meeting rooms, conferences rooms, ballroom, auditorium, hotel, amenities, administration, Jeddah chamber of commerce, and services. The space diagram of the project is tabulated in Table 1. Also, the parking calculation of the considered zone is shown in Table 2.

Site area (26400 x 100/40) = 66,000 m²

Parking space (868 x 28) = 24,304 m²

Adding Parking area to the site = 66,000 + 24,304 = 90,304 m²

Table 1. Space program

Zone	Gross Area (m ²)	Net Area (m ²)	Percentage (%)	No. of floor	Foot Print (m ²)
Exhibition Halls	14000	9800	36	2	7000
Meeting Rooms	2000	1400	5	1	2000
Conferences Rooms	4000	2800	10	2	2000
Ballroom	3200	2240	8	1	1600
Auditorium	4000	2800	10	1	4000
Hotel	4000	2800	10	4	1000
Amenities	1200	840	3	1	1200
Administration	1600	1120	4	1	1600
Jeddah Chamber of Commerce	800	560	2	1	800
Services	5200	3380	12	1	5200
Total	40000	27740	100		26400

Table 2. Parking Lots Calculation

Zone	Regulation	Parking Calculation	Parking Lots
Exhibition Halls	1 Parking Lot / 100 m ² of the sub-gross area	14000/100	140
Meeting Rooms		2000/100	20
Conference Rooms		4000/100	40
Ballroom	1 Parking Lot / 3.5 m ² of the seating area	1234/3.5	353
Auditorium	1 Parking Lot / 3.5 m ² of the seating area	892/3.5	255
Hotel	1 Parking Lot / Room	60/1	60
Total no. of Parking Lots			868

SITE SELECTION AND ANALYSIS

There are two site were proposed for the project site location. Figure 4 shows site 1 is located on King AbdulAziz Road near Roshan Mall. It is right across Jeddah Corniche where there are various hotels and restaurants. This site total area is 173,576 m². Figure 5 shows site 2 is located on Al-Madina Road right across Mall of Arabia. It is situated in a highly active commercial area, as it exists near many shopping centers, supermarkets and hotels. The total area of the site is 121,205 m².

**Figure 4.** Site 1 [16]**Figure 5.** Site 2 [17]

There are eight criteria are considered for site evaluation such as accessibility, image/ visual quality, visibility, site capacity,

proximity to support services, proximity to the airport, surrounding land use, and security. Each of the criterion is graded with weight factor from 1 to 3, where 1 is less important, 2 is somehow important and 3 is very important. The site evaluation result is tabulated in Table 3.

The expected daily visitors for such a project are high in number. The convention center site should be easy accessed by automobiles. Easy accessed means that it is located on an area of good traffic flow, passed by a highway, and connected to public transportation links. Secondly, locating the convention center in an area of strong positive image is important to increase the user's positive perception. Having a landmark near the site will add value to it. The center will be visited by many people that might be visiting the city for the first time, in addition to the factor that the center may be an iconic feature and landmark in the city. Thus, it needs to be visible and reached by a major street. The site should be suitable for the required needs of the center with its footprint. Also, future expansion availability is an important factor. Next, the more that the site is near to hotels, shopping centers, diners, and other services, the more value the site has. Besides that, visitors from all over the world will be targeting the convention center, thus it needs to be located somehow near to the airport to minimize the travelling distance and makes it easier for international visitors to reach the site. The site needs to be located near to commercial buildings that will support its function and does not require low level of noise because that the expected noise level of the center is quiet high. Also, to preserve resident's privacy the selected site shouldn't be located within a residential area. In addition, with the number of expected visitors of the convention center and the variation of people's ranks and positions, the site needs to be secure enough to accommodate important visitors and insure safety for the large number of people. Certain logistics and protocols are required for security purposes regarding the site and the access to the centre e.g. it must be located near major streets where there aren't many back road branches in a securely maintained location.

Table 3. Site Evaluation

Evaluation Criteria	Weighting factors	Site 1	Site 2
Accessibility	3	12	12
Image/ Visual Quality	2	10	6
Visibility	3	15	15
Site Capacity	2	10	8
Proximity to Support Services	2	8	8
Proximity to The Airport	2	6	10
Surrounding Land Use	1	3	1
Security	2	6	8
Total		70	68

Based on the site evaluation result shown in Table 3, site 1 marks the highest score and becomes the site location of the project. Figure 6 shows the selected site is located on King AbdulAziz Road near Roshan Mall, with site area of 173,576m².

The dry climate of Jeddah maintains warm temperatures in winter, which may range from 15 °C at midnight to 25 °C in the afternoon. Jeddah is very hot in summer, frequently breaking 43 °C in the afternoon and dropping to 30 °C in the evening. Rainfall in Jeddah is usually insignificant, usually in November and December. Figure 7 demonstrate the site climate analysis. Jeddah's prevailing wind comes from the north western direction due to its costal location on the Red Sea. The orientation of the

site location is towards the North West which is in the same direction of the wind. This wind is usually light-to moderate for much of the year and provides a cold gentle breeze. This climatic feature is important to be taken in consideration during the design phase when placing the openings and outdoor areas in order to gain the maximum benefit from this north-western wind.



Figure 6. Chosen site



Figure 7. Climate diagram

Figure 8 demonstrates the site accessibility analysis. The site is located near to two main roads King Abdulaziz Road and Royal Terminal Road that are considered the main access to the site. It is also near Al-Madina Road and Prince Sultan Street. Besides that, the site is located near to residential area but on King Abdulaziz Road that is considered commercial and it is close to shopping malls and relatively close to the airport. There are many landmarks that surround the site and increase its value. Some of these surroundings are Globe Roundabout, Roshan Mall, Auto Mall, and Royal Terminal.

Figure 9 shows the visual and acoustic analysis diagram of the selected site. The site is surrounded by an area with a diversity of importance. The best view is where the Globe Roundabout is found, whereas, it is neutral view on the main access streets to the site. On the back of the site, where the service entrances will be, is an unwanted view as there are only un-built lands in there. Noise is not a negative point when it comes to the convention center but we need to be careful while locating meeting rooms and places that need little quietness.

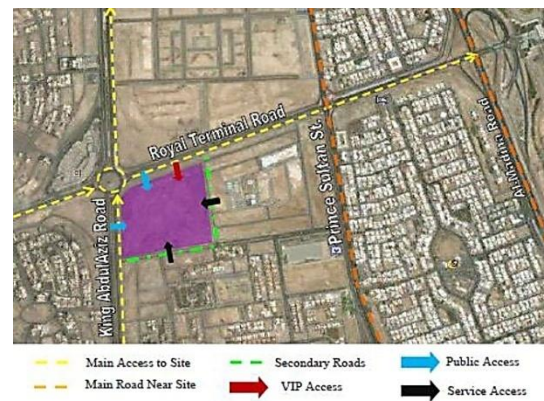


Figure 8. Accessibility Map

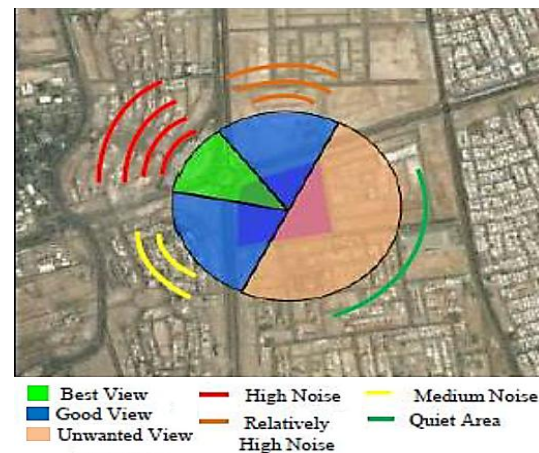


Figure 9. Visual and Acoustic Diagram

ZONING AND PROJECT DESIGN

Figure 10 shows the site zoning of the project. A complex of different spaces is created that serves all the community with different directions. This will help Jeddah to be developed and to make it the target for all business developers and tourists. Also, having the proper place could make our talented youth reach the international world and succeed in delivering their passion. Figure 11 and Figure 12 demonstrate the project's bird view and main perspective view respectively.



Figure 10. Suggested Zoning inside the site



Figure 11. Project's bird view

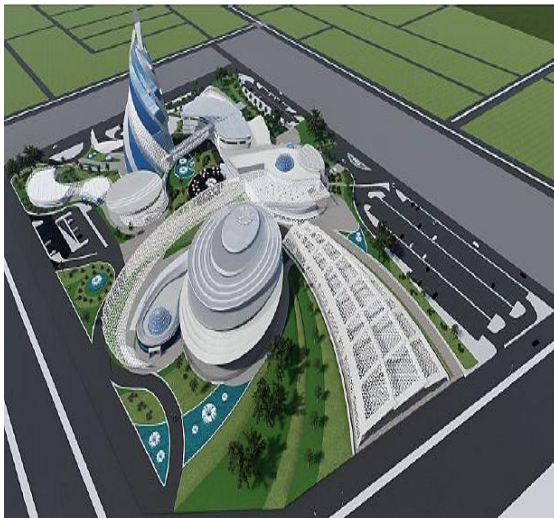


Figure 12. Main Perspective View

CONCLUSION

This project enhances the connection of Jeddah between Saudi Arabia and the rest of the world. As a coastal city, Jeddah can be the target and the connection through business and tourism. In addition, the social fabric of Al-Hejaz area with the diversity of nationalities and cultures makes it the place where the world can be connected. The diversity is also appeared in different majors and different business sectors that need to be shown internationally. The proposed space program of the project consists of exhibition halls, meeting rooms, conferences rooms, ballroom, auditorium, hotel, amenities, administration, Jeddah chamber of commerce, and services. The selected site location is on King AbdulAziz Road near Roshan Mall, based on the site assessment benchmarks of accessibility, image/ visual quality, visibility, site capacity, proximity to support services, proximity to the airport, surrounding land use, and security. This project establishes a center for business and entertainment locally in Jeddah and internationally around the world. Moreover, making Jeddah an incentive business and tourism destination as it is an important part of Jeddah development.

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