

## BAIT AL-HAKAWAT: AN OPERA HOUSE IN JEDDAH

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### Abstract

Jeddah opera house will act the part as a cultural center for music and performing art. It will offer a new place of entertainment and education in Jeddah. Having such a platform within the city will help the community express their thoughts and problems in an artistic way. This cultural center will showcase the musical heritage to whoever visits it. This project aims to preserve the musical heritage for future generation to explore and continue to develop. Several case studies were included for the fundamental of the project construction. The space program of the project includes the theatre, workshop, recreational zone, service zone, parking zone and festival arena. The selected site is located in north Jeddah corniche in Almurjan District, based on several site evaluation criteria. Various performances are dedicatedly designed for the Jeddah Opera House; therefore it will be a place for the whole family and all different musical tastes.

**Keywords** -- Opera House, Entertainment, Education, Cultural Center, Music and Performing

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### INTRODUCTION

The Opera House is a theatre building used to perform opera, including a stage, orchestra stage, audience seats, and backstage facilities for costumes and sets [1]. Although some venues are built specifically for opera, others are part of a large performing arts center that includes the main opera theatre with other secondary venues. An opera house can be designed to offer flexibility and accommodate different performance formats such as opera, theatre, concerts, children's shows, comedy, Arab and world music, popular entertainment, events, exhibitions, studio: a flexible space, multi-purpose venue, recording studio, and flexible open-air venue [2-4].

Theatres and opera houses have played an important role in society ever since their origin. They became a focal point of social and political life [5]. The opera houses show the wealth and prestige of the cities they built. Even if attending a show at one of these grand theatres is definitely an amazing experience, many of them can be visited without purchasing a show ticket. However, these costly, high profile buildings are cultural economics. Like many art museums, the most ambitious new opera houses and concert halls are the twenty first century equivalent of the medieval cathedral; they are a symbol of wealth and power.

Performing arts and music helps to understand human as well as express their thought more effectively. It develops the ability to communicate with thoughts and feelings to others, improving human relationships and improving the world around [6, 7]. It is also a great way to learn about history, it makes the history becoming tangible and alive right before our eyes. Theatre helps to understand people from other cultures. It's a way of expressing and developing creativity in a society.

### CASE STUDIES

There are three opera houses and a culture village from Norway, USA, Oman and Qatar were chosen case studies due to its attractive design concept and unique structure. The chosen case studies are:

- Oslo Opera House, Norway
- Margot and Bill Winspear Opera House, Dallas, USA
- The Royal Opera House in Muscat, Oman
- Katara Cultural Village, Doha, Qatar

### Oslo Opera House, Norway

Oslo Opera House located in Norway is designed by Snohetta (Figure 1). This proposal was a competition winner the Norwegian Opera and Ballet The largest musical institution and Norway and the building's final user. The main purpose of the institution is to become a national representative and producer of opera, ballet, music and dance theaters and concerts. They have about 300 performances and about 250,000 visitors each year. The Opera House will become a workplace for approximately 600 employees from more than 50 industries. The conceptual foundation of the competition and the final building is a combination of three elements namely wavy wall, factory and carpet [8].

### Margot and Bill Winspear Opera House, Dallas, USA

The new Winspear Opera House is designed by Foster & Partners and OMA with Michel Desvigne., located in Dallas has changed the definition and meaning of an opera house in the twenty first century, due to breaking down barriers this opera house is a place for everyone. In order to cope with the weather in Dallas, they extended a solar canopy from the building, leading to a huge glass lobby. By doing that the integrated the landscape with the actual building providing different activities underneath the canopy like shaded pedestrian plaza that grew to be an important public space in Dallas, within the master plan for the Performing Arts District [9].

### The Royal Opera House in Muscat, Oman

The royal opera house is embracing the classical Islamic style, highlighting some elements from the traditional architecture of all around the country. Architects Wimberly Allison Tong and Goo (WATG) used elements like porches, terraces and sculptural tower forms the font of the traditional architecture. The architects also used traditional and locally available materials enhancing the sustainability of the building [10].

The article content image of the building was highly influenced by the Grand Palaces of Oman. The entrance was emphasized by Grand Plaza and palm trees. The structure is completed by locally sourced limestone and complementary stucco. Music make and design was implemented in the stage area where they added a moveable acoustic shell that could be adjusted according to the names of the performance. These elements provide unique,

adaptable volume control devices that provide unmatched natural sound [10].

**Katara Cultural Village, Doha, Qatar**

The Cultural Village Foundation is an extraordinary project that hopes to achieve human-to-human interaction through artistic and cultural exchanges. This is due to Qatar’s father Emir Sheikh Hamad Bin Khalifa Altani Your enlightening vision, firm conviction and wise leadership have been realized. The Katara Cultural Village keeps pace with the emerging global culture that emphasizes the importance of diversity in human development and is the largest and most dimensional cultural project in Qatar. This is where people gather to experience world culture. Katara has beautiful theaters, concert halls, exhibition halls and advanced facilities, aiming to become a world leader in multicultural events. According to the goals set out in Qatar’s 2030 National Vision, Katara defends Qatar’s heritage and traditions and strives to spread awareness of the importance of each culture and civilization. Therefore, Katara has undertaken International, regional and local affairs festivals, workshops, performances and exhibitions. The concept of architecture is that Katara was born in the long-term vision of positioning the State of Qatar as a cultural and artistic lighthouse, and radiates in the Middle East through theatres, literature, music, visual arts, conference exhibitions [11, 12].



Figure 4. Katara Cultural Village, Doha, Qatar [12]



Figure 1. Oslo Opera House, Norway [8]



Figure 2. Margot and Bill Winspear Opera House, Dallas, USA [9]



Figure 3. The Royal Opera House in Muscat, Oman [10]

**SPACE PROGRAM**

The space program of the project is divided in to two types which is buildable and unbuildable. There are four zones are allocated for buildable namely theatres zone, workshop zone, recreational zone and service zone. While, the unbuildable zones are festival arena zone, parking zone, footprint zone and site zone. The space program of the project is shown in Table 1.

Table 1. Space program

Type	Zones	Total Area (m <sup>2</sup> )
Buildable	Theatres	12600
	Workshops	6300
	Recreational	3000
	Services	8100
	<b>GFA</b>	<b>30000</b>
Unbuildable	Festival Arena	5000
	Parking	5912
	Footprint	10000
	Site	25000
	<b>Total site area</b>	<b>45912</b>

There are several design considerations. The first is the special acoustic design. High-quality acoustic characteristics are important in the auditorium space, so performances and demonstrations can be clearly heard and understood. For performance spaces and general display spaces, the recommended noise standard (NC) level range is NC-20 to NC-30. It is recommended that the sound transmission level (STC) level be from STC 40 to STC50. E.g, Type II vinyl wall coverings and fabric-covered soundproofing wall panels for interior wall decoration in auditoriums; Type II vinyl wall covering for the stage area, also used for covering 1/3 of the front of the side wall of the band (audience), and for sound absorption of fabric covering 2/3 of the rear of the side wall of the band (audience) board.

Second design consideration is increased cooling capacity. The heating, ventilation and air conditioning (HVAC) system in the auditorium space is designed to accommodate different internal loads that are a function of the number of spectators, performance lighting loads and projection equipment. In particular, the air handling unit (AHU) with greater cooling capacity should be divided into auditorium, hall, projection space, stage area and audience seating area. In addition, the auditorium usually has an independent AHU constant volume and has regulated temperature control for ventilation.

Raised floor is the third design consideration. The recommended system for distributing HVAC in the auditorium space is ventilated through floor vents, and ceiling vents are used in auditoriums and halls. In other spaces, it is recommended to use a ducted ceiling with a return air chamber. Also, there should be pipes on all acoustic panels.

Fourth design consideration is secure and safe. For fire prevention and life safety, when an emergency occurs in the auditorium, appropriate notification systems, lighting and signs

are required to ensure safety and rapid evacuation. Step lights are embedded in the floor pillars at each seat level, and low-light wall lights mounted on the walls along the side walls are also typical. Sprinklers should be provided under the stage platform according to specifications to prevent fire.

The final design consideration is wheelchair space. The auditorium should provide at least four wheelchair spaces in the auditorium and no more than 800 fixed seats. For auditoriums with more than 800 fixed seats, two wheelchair spaces should be provided for every 400 fixed seats and any part of them. For example, if there are 900 fixed seats, at least six wheelchair spaces should be provided. The premises shall be grouped in pairs with no less than two pairs and shall not be separated from other auditoriums. Each wheelchair space should have an unobstructed line of sight in the stage area where related activities are performed, and its minimum size should be 800 mm x 1300 mm, with the 800 mm side facing the stage's podium or screen. The minimum width of the passage from the barrier-free entrance of the auditorium to the wheelchair space shall not be less than 1500 mm. In addition, when a wheelchair user does not occupy the space, an easily movable seat can be installed in the space.

**SITE SELECTION AND ANALYSIS**

There are two site locations were proposed. Figure 5 shows site 1 is located in AbrugAlragama, in east Jeddah across of King Abdulaziz cultural center. This site has a good accessibility because of the new train station. There is a possibility of development for the existing culture center at this site. This location holds important culture value it's the last place King Abdulaziz stood when opening Jeddah and completing the kingdom of Saudi Arabia thus ending the era of war. This site also located on the Makkah Road so it's a good location to attract tourists. Figure 6 shows site 2 is located in north Jeddah corniche in Almurjan District, which has a sea side view and surrounded by recreational areas. This site is next to Masjid Al Rahma, this is a landmark of Jeddah city, also located between the old and new Jeddah.



Figure 5. Site 1 [13]



Figure 6. Site 2 [14]

There are several site evaluation criteria such as site size, proximity to population to be served, year round accessibility, site topography, road access, aesthetic value, sun orientation, utilities, shape and proportional, noise levels, security and safety, visibility and surrounding of the site. Table 2 demonstrate the site evaluation result. Each criterion will be rated with weighting factor to indicate the level of importance, where 1 is not very important and 5 is essentially important. Each site will be ranked with the score from 0 to 4, where 0 is unacceptable and 4 is excellent.

The site area should be bigger than the estimated to consider any regulation limitations such as drop-offs and buses parked as well as buffer zones. There should be enough area for any future expansions. The site should be in the city center to serve all Jeddah citizens. The location should also be located where people and tourists can easily reach, and at the same time reach other tourist attractions near Jeddah. Regardless of the effect of weather and temperature on paths, sidewalks or roads, the site should be easily accessible at all times of the year. In some communities, there might not be good accessibility during rainy season in Jeddah. Regarding the site topography, the site is slowly inclined and has a certain height and contour to ensure good drainage. The location should be comparable to some terrains, which can provide opportunities for festivals and other events. The site should have easy accessibility from a main road and surrounded at least by one secondary road for service entrance. The location has the quality of the surrounding environment, such as vegetation, terrain, landscape and surrounding environment. Sea side view is also important in Jeddah. The site should have good views for the outdoor activities and recreational areas to attract more visitors.

The site should allow the design to make full use of the available solar angle. Usually, the play area is placed outdoors to receive sunlight, making it an ideal venue for activities. The site should have connection into existing and reliable utilities such as water supply system, waste and sewer system, electrical system and fuel storage or distribution system. The site shape can be organic to provide an interesting design challenge and good views all around. Rectangular sites are also fine. The noise should not be severe enough to interfere with communication. The location should be away from air traffic, noisy industrial or commercial enterprises, and high-speed vehicle traffic, especially trucks and buses. For safety reasons, it should be convenient to go to the fire station, police station and hospital. Avoid placing this location near socially hazardous communities, such as crime or drug-prone areas. In addition, the site should be far away from industrial and manufacturing areas to avoid poor air quality problems such as odour, dust and noise. The site needs a prominent position to attract a large number of people. The ideal choice is a conspicuous location on the main street with convenient transportation. If the site involves other buildings, it should be directed to the part of the site with the highest visibility. The surrounding of the site should have a relation with the main function the project. Thus, the project will blend with the surrounding and assist in achieving the objectives of the project.

Table 2. Site Evaluation

Criteria	Weighting Factors	Site 1		Site 2	
		Rating (0-4)	Score	Rating (0-4)	Score
Site size	4	3	12	4	16
Proximity to population to be served	5	2	10	4	20
Year round accessibility	3	1	3	4	12
Site topography	3	3	9	4	12
Road access	4	2	8	3	12
Aesthetic value	5	1	5	4	20

Sun orientation	2	3	6	1	2
Utilities	4	4	16	4	16
Shape/ proportional	1	2	2	3	3
Noise levels	1	3	3	2	2
Security and safety	3	1	3	3	9
Visibility	5	1	5	3	15
Surrounding	2	1	2	2	4
<b>Total</b>			<b>84</b>		<b>143</b>

Based on the site evaluation result shown in Table 2, site 2 is selected for the site location of the project, which is located in the northern Jeddah corniche. The Al Shatea district on the corniche road is considered the very beginning of the corniche road as it is easily accessible from Al Salam Street and Malik Road as well as Al Madinah road (Figure 7). Regarding the future development of this site, the construction is on-going for the development of the northern corniche next to the selected site. Figure 8 shows the site climate analysis, this site has an average high temperature between 29°C and 40°C, the average lowest temperature is between 18°C and 28°C. Besides that, the average rainfall is nearly zero from February to October, 0.5mm on January, 6.5mm on November and 11.5mm on December.

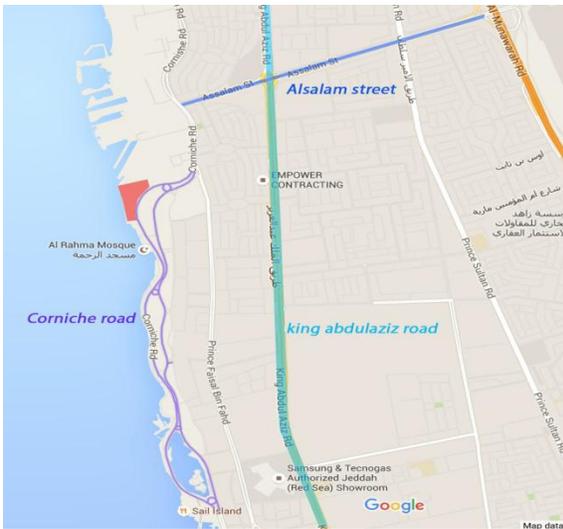


Figure 7. Site accessibility



- North West Good Wind
- South East Bad Wind
- Noise
- Views

Figure 8. Site climate analysis

**ZONING AND PROJECT DESIGN**

Figure 9 and Figure 10 demonstrate the site zoning and site plan respectively. The festival arena is located at the beach. The parking place is located along the corniche road and the recreational zone is located in between two theatre zones. There is a workshop located next to a theatre zone. Figure 11 and Figure 12 demonstrate the main perspective view and the main entrance of the building respectively.



Figure 9. Site zoning (A: Theatres, B: Workshops, C: Recreational)



Figure 10. Site plan



Figure 11. Main perspective view of the project



Figure 12. The main entrance of the building

### CONCLUSION

Saudi Arabia has a deep-rooted cultural heritage and a series of civilizations proud of Islamic religion. The project aims to emphasize the cultural aspects of Saudi Arabia and integrate them with Islamic, political and economic aspects. The proposed space program for the project covered several primary zones such as theatre, workshop, recreational zone, service zone, parking zone and festival arena. The selected site location is located in north Jeddah corniche in Almurjan District, based on the evaluation criteria of location size, close to the population to be served, year round accessibility, site topography, road access, aesthetic value, sun orientation, utilities, shape and proportional, noise levels, security and safety, visibility and surrounding of the site. The selected site also analyse for the accessibility and climate analysis. This place is expected to become one of the social hubs for all age groups peoples in Jeddah, Saudi Arabia.

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